Gas Journal

LIGHT - HEAT - POWER - BY-PRODUCTS

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VOL. 245 97th YEAR No. 4275

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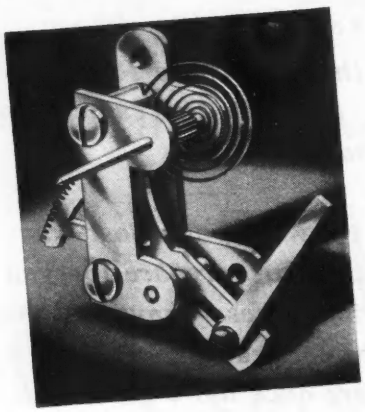

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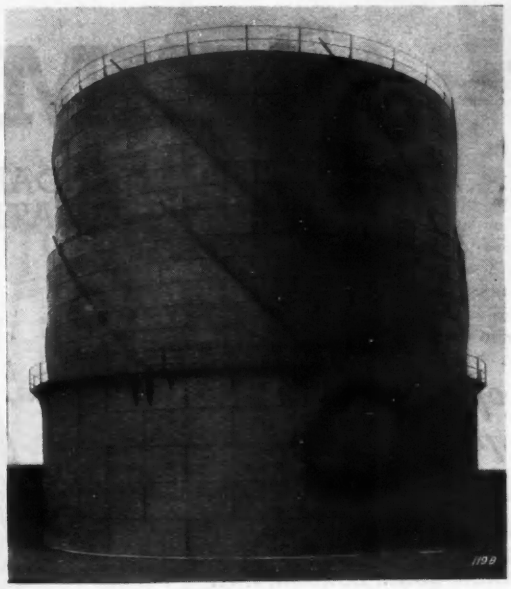

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1844

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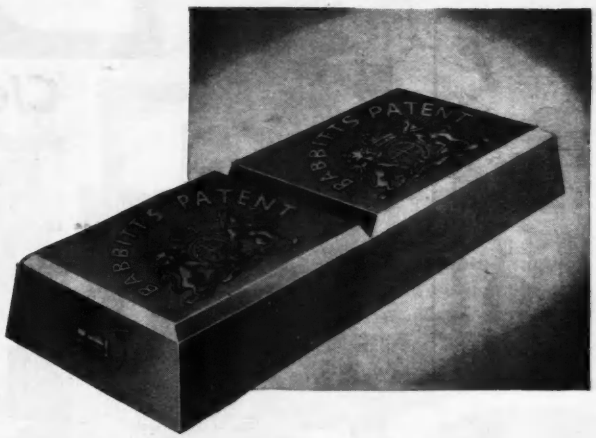

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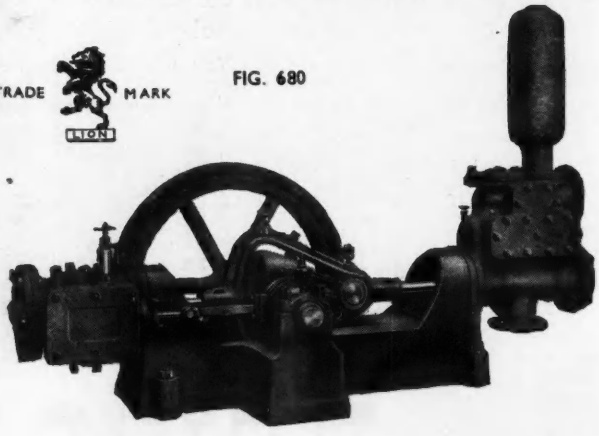

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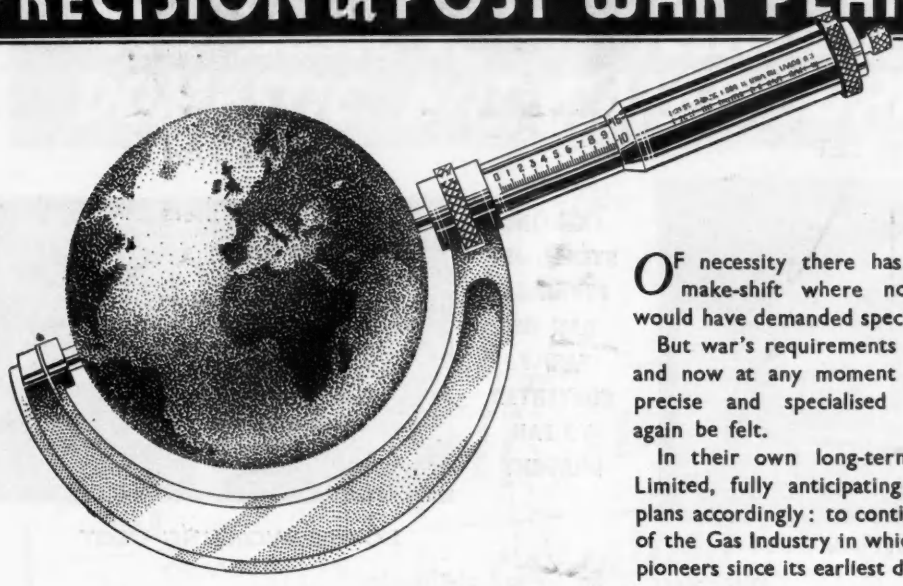
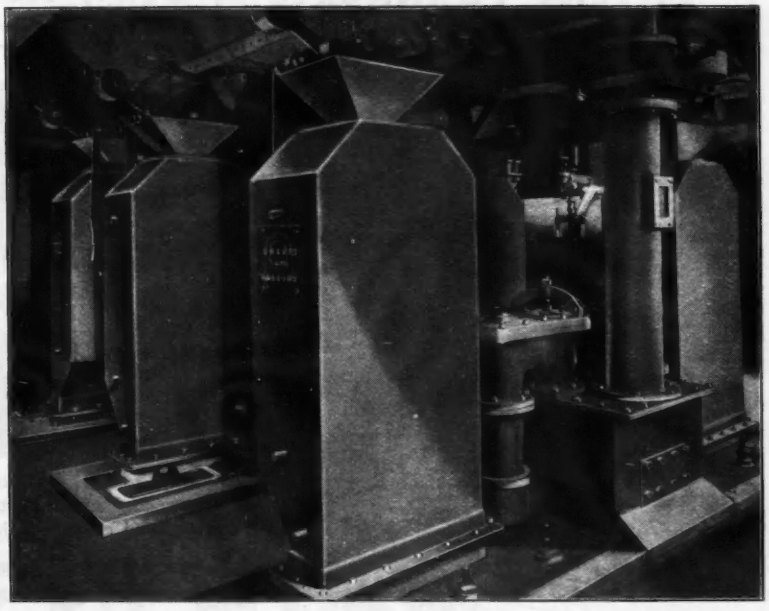


OF necessity there has been a lot of make-shift where normally prudence would have demanded specialist attention.

But war's requirements were paramount, and now at any moment the demand for precise and specialised engineering will again be felt.

In their own long-term policy Drakes Limited, fully anticipating this, laid their plans accordingly: to continue in the service of the Gas Industry in which they have been pioneers since its earliest days.



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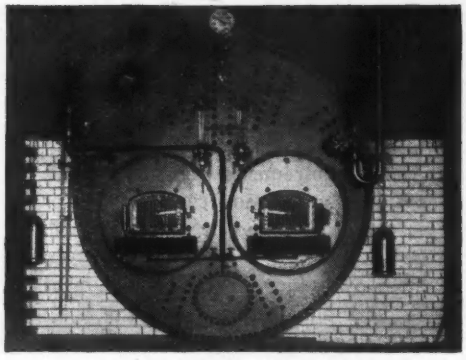

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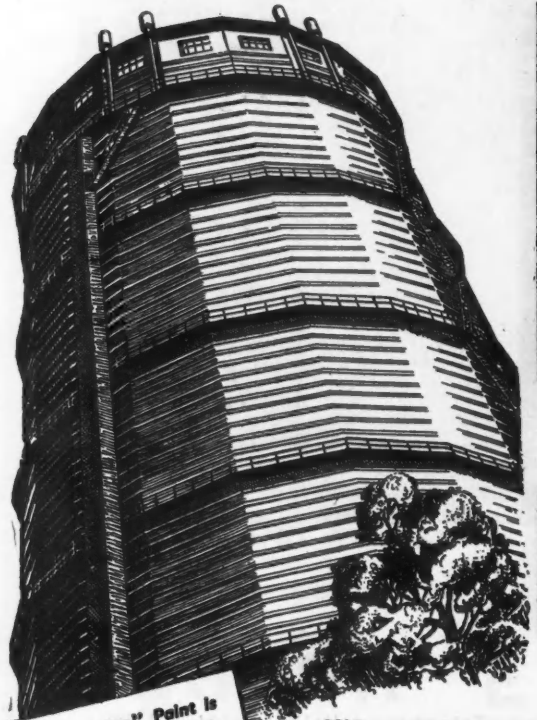

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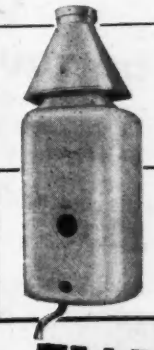

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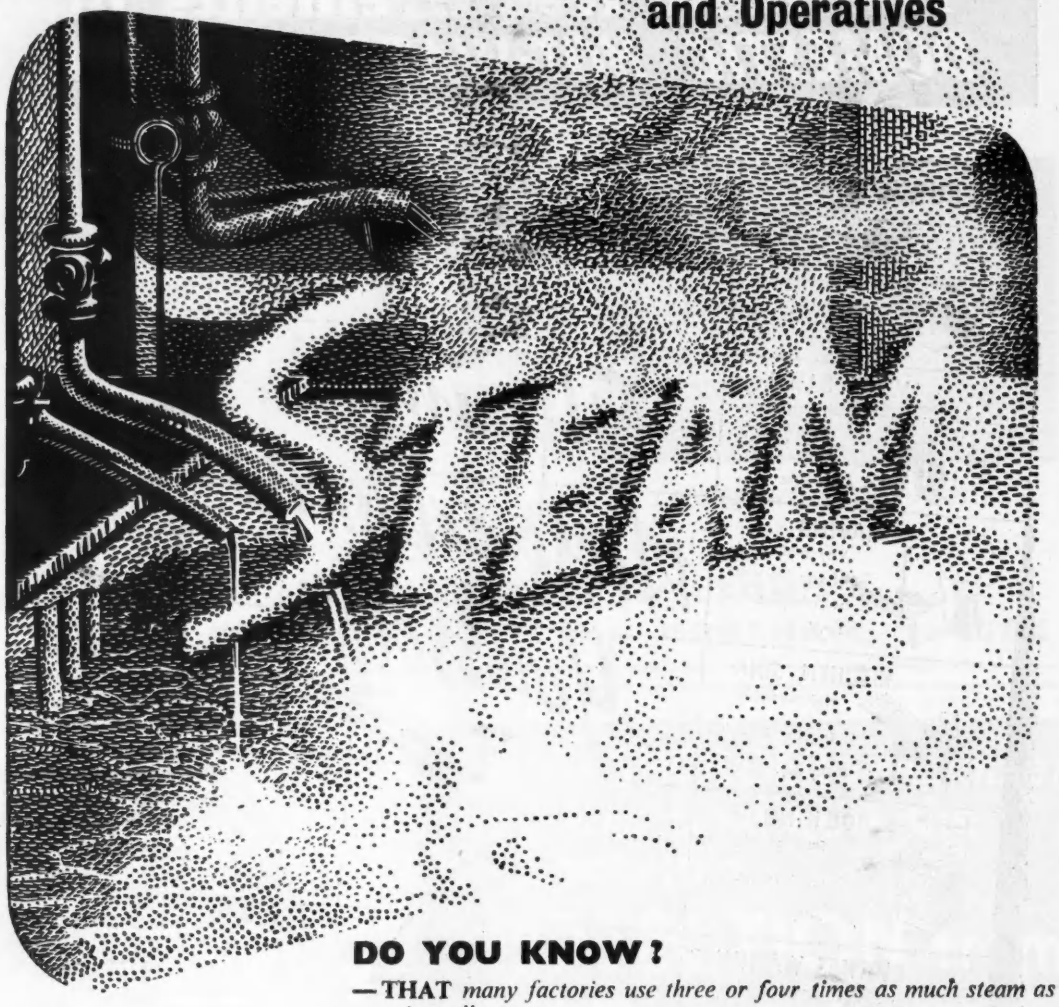

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Or combine with other firms for a joint showing. Nobody who uses steam for any purpose should miss it.

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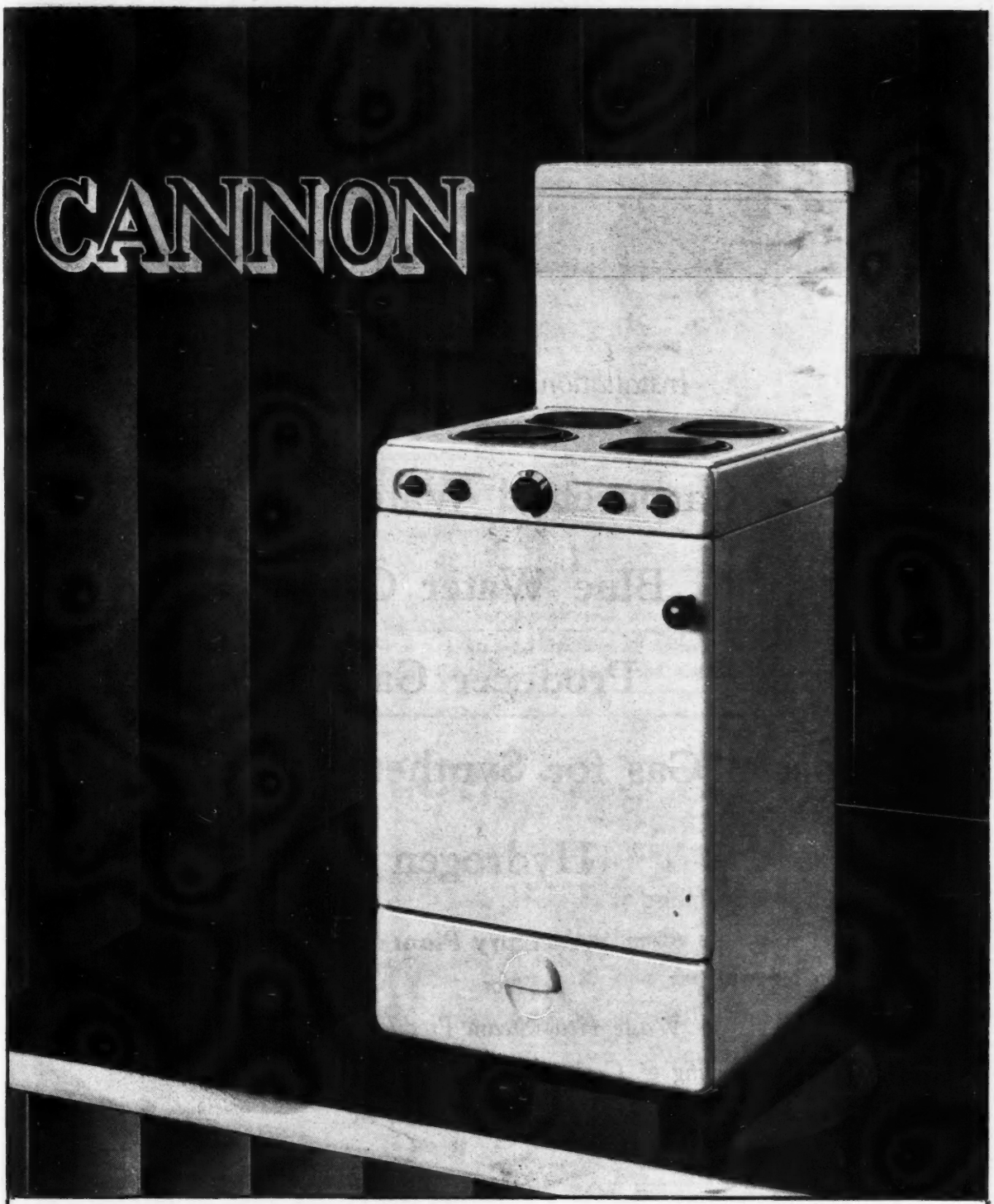

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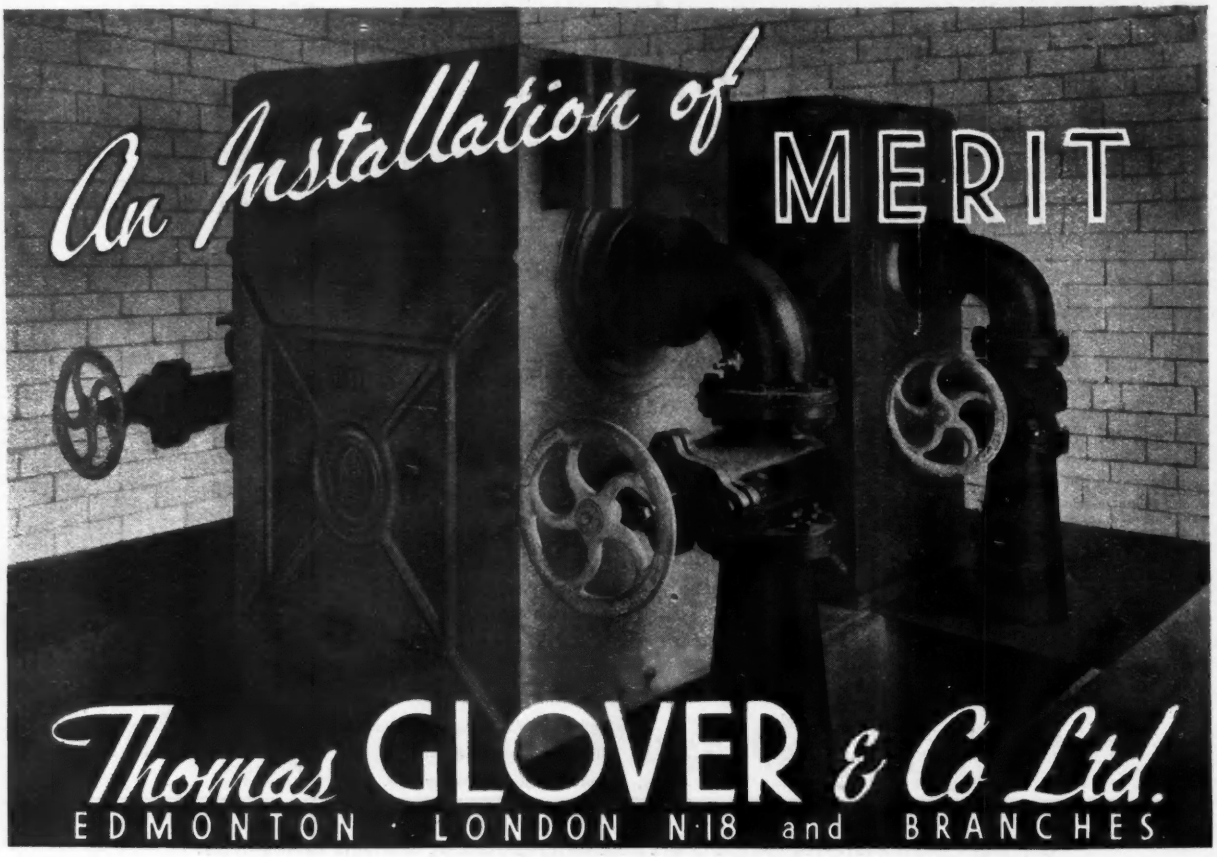

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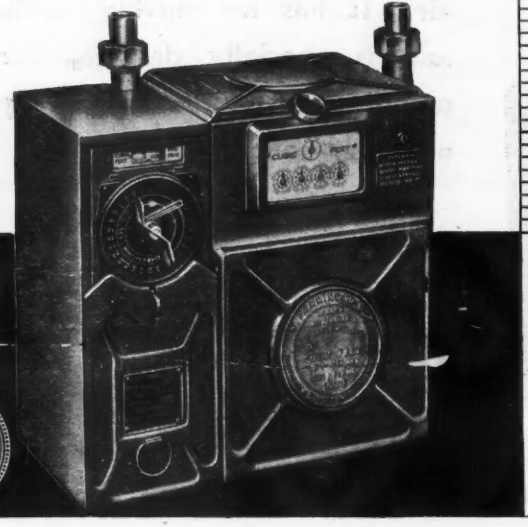

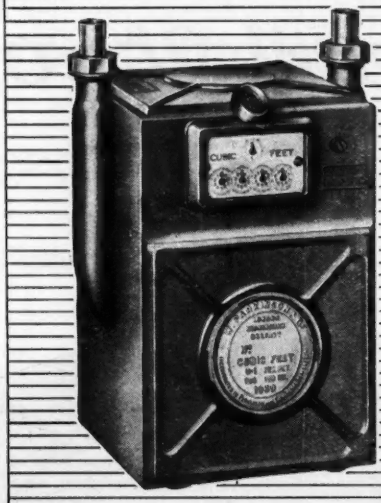

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p. 5

GAS JOURNAL, APRIL 25, 1945

VOL. 245 97th YEAR No. 4275

EDITORIAL NOTES

GAS SERVICE RECRUITMENT AND TRAINING

IT is axiomatic that the quality of the Gas Industry's personnel will determine the extent to which the Industry will in fact realize its undoubted potentialities. For many years attention has been directed to the training of entrants on the gas engineering side, and in the years immediately prior to the war steps were being taken to widen the scope of the schemes which had been established for the training of gasfitters. In recent issues of the "JOURNAL" we have detailed and discussed the moves made in regard to the rehabilitation of these two classes of entrant. It is different and unsatisfactory when we turn to the question of the recruitment and training of gas sales and service representatives—of district representatives, showroom sales staff, builders' representatives and industrial salesmen, publicity and advertising personnel and home service advisers—in which regard there is absence of co-ordination, plan, and uniformity. Yet there can be no doubt that Gas Industry representation to its consumers, if the Industry seeks to serve the community fully, will need to be stronger and trained to a higher standard.

It is no doubt common knowledge that in January, 1944, the Executive Committee of the B.C.G.A. set up a special committee to examine this very problem, which, though urgent, is by no means new, and to make recommendations, Those appointed to serve on the committee were well qualified in all respects to cope with the task, and we know that they studied the problem comprehensively and seriously; and by October last the committee had issued a full report containing clearly stated recommendations. The work entailed in its preparation cannot have been light. In last week's "JOURNAL" (p. 497) we gave a brief statement recording a meeting of the British Gas Council on April 10, at which meeting a report from the Executive Board dated March 27 was received and adopted. Among the matters dealt with in this report was the recruitment and training of gas sales and service personnel. It was stated that a sub-committee had been set up to examine the B.C.G.A. report to which we have referred; and at the meeting on April 10 the British Gas Council accepted the recommendation that the B.C.G.A. committee which had reported on the subject should be "thanked for their work and informed that the scheme put forward was not a suitable one at the present time." There was an addendum that the I.G.E. Education Committee should be asked to reconsider a scheme prepared in 1939 in conjunction with representatives appointed by the B.C.G.A. We are, in fact, back where we started, which in this respect *as an Industry* as distinct from progressive individual undertakings is really behind the starting-line. For how long, we wonder, are we to hear of the raising of the status of the selling and service personnel, which form an essential link between the gas-works and the gas consumer, the while little or nothing is done on a national basis in an attempt to fill what is surely a recognized need?

Obviously the B.C.G.A. report, opened temporarily by the few, is a closed book to the many as the Industry pursues its strictly confidential course. Maybe the scheme envisaged in the report was over-ambitious; we do not know and cannot criticize. Nor are we criticizing the decision of the British Gas Council in adopting the recommendation of the sub-committee which examined this particular report. What does appear to us—and this is the gist of this short note—is that valuable time is being wasted and opportunity for advancement lost in the absence of practical proof that the Gas Industry means what it says about the desirability of employing suitably selected and appropriately trained personnel on the sales and service side, and of ensuring for them in a practical way the status to which the importance of their work should entitle them.

We realize that the present is not an appropriate time for the immediate application of cut and dried schemes for training and rehabilitation, that for the time being and maybe for some time to come the first practical requirement is flexibility, whatever the nature of the course, refresher or otherwise. But this does not mean to say that there is no need to formulate on solid lines a long-term policy; quite the reverse. And it is apparent that there is a minimum limit to the size, staffing, and equipment of any training centre if it is to be workable and at the same time an economic proposition. The gas appliances installed and to be installed are many and varied, and to cater for individual training would be impossible. In other words, any centre must in effect be a group scheme. Men are gradually being released from the Services and from other essential war work; at the other end boys are gradually entering the Industry once again as apprentices. If for a moment we refer to activities at the training centre of the Gas Light and Coke Company, we do so because it is acknowledged as a pioneer and as a highly successful organization helping others beyond the confines of the Company itself. It is only a few days ago that we had an opportunity of re-visiting Watson House and seeing what is being done in this section of the organization's composite activity. Refresher courses for foremen, and so on, were in progress, men returned from the Forces were re-acquiring their skill as peace-time workers in the Industry, and it was good to see apprentices once more at training benches which throughout the war until recently had been given over to war work of a very different character. Our visit reinforced our contention of the paramount need for flexibility in the gradual transformation in the Gas Industry labour force which lies ahead. And it reinforced another contention—that the future success of the Industry largely depends on more uniform systems of general training planned on practical and economic lines and on an adequate scale. To-day there is lack of uniformity in system, and, we suggest, in effort throughout the Industry—an absence of uniformity coupled with flexibility which calls for remedy.

SURVIVAL OF THE FITTEST

WE have been very interested in the views of the Manager of a gas undertaking in Australia—Mr. J. W. Batchelor, of Gympie, Queensland—on the service which gas undertakings outside the capital cities are, or are not, setting out to provide in the reconstruction period after the war. The opinions were expressed in a Paper at the annual conference of the Australian Gas Institute, and appeal to us the more in that the Author was from 1917 to 1936 engaged in the electrical industry, chiefly with country town power stations and for some time with the State Electricity Commission of Victoria. The basis of his theme was that, post-war, competition among the various fuels will be keener than ever before and, as a corollary, only the fittest will survive—and that the Gas Industry's chief competitor will be electricity. How, he asked, will the small country gas-works fare?

In Australia small country electricity generating stations are fast disappearing; there is steady amalgamation with one or other central authority. State Electricity Commissions are operating in practically all the States of the Commonwealth, these Commissions advising the independent undertaking and supplying commercial and technical assistance. Central control authorities have been responsible for the introduction of standardization of all important sections of the electrical industry;

breaches of the rules are punishable. The training of personnel for the electrical industry is good; no one is, for example, allowed to install or repair an installation without appropriate qualification. Tariffs have been designed with commercial acumen, high prices per unit being charged for what may be called the monopoly load, which is lighting; prices charged for other domestic purposes are much lower, and the public is led to believe that electricity is cheap and competitive with gas for these purposes. Electricity, aided by the States, is fast being made available in rural areas (*e.g.*, the Queensland Government proposes to subsidize this development to the extent of 60% of the total capital expenditure). Practically all small electrical appliances can be purchased in any ironmongery store, taken home, and plugged into a power outlet; and this, said the Author, speaks well for standardization and for co-operation between manufacturers, merchants, contractors, and supply authorities. The profit margin on all appliances is sufficient to make trading extremely attractive.

Australia is a long way away from Great Britain, but domestic heat services questions are not at all remote from ours; and Mr. Batchelor is in no two minds that the future of gas in the Commonwealth will depend on offering more than electricity can offer, and that this will be impossible without much closer co-operation and unity between all gas undertakings, large and small, appliance manufacturers, merchants, and contractors; that the weaker works must join up with larger organizations; that the introduction of attractive gas tariffs is essential; and that Australian gas undertakings must discontinue recruiting "administrative personnel from the stoke-house." And he urged among other things stricter control of appliance performance, encouragement of a greater measure of standardization, and the establishment of some central body to organize technical training and refresher courses and to give special and regular training to those on the sales and service side of the Industry—all of which suggestions are sound enough if the end in view is to be achieved.

Personal

A tribute was paid to Mr. A. W. SMITH by his friends in the Midlands Gas Industry last week when he was entertained at lunch upon his retirement from the position of General Manager and Secretary of the Birmingham Gas Department. "A very great man in the Gas Industry" was the description applied by the Chairman, Mr. F. C. Briggs, of Dudley and Brierley Hill. Mr. Briggs said Mr. Smith was a wise counsellor and friend of all engaged in the Gas Industry. Mr. Smith was presented with an illuminated address which spoke of his "unfailing and courteous help" and of his "untiring and invaluable services." Later he will receive a painting of himself. Councillor J. C. Burman (Chairman of the Birmingham Gas Committee), in an appreciative speech, said Mr. Smith had served the City splendidly, and in any difficulties that might be ahead he would not hesitate to consult him as to the best policy to pursue. Mr. Smith, in his reply, said that during his time with the Birmingham Gas Department he had had two wonderful Chairmen, Alderman Sir Hallewell Rogers and Alderman J. H. Lloyd. Nobody could have had better mentors. They realized that Birmingham was so big that it must bear the big brother's burden in the interest of the Gas Industry generally, and they never begrudged the time devoted by the General Manager to matters of wider policy. He paid a tribute to the help that he had received from Mr. A. W. Lee, whose appointment as his successor had delighted him.

* * *

Alderman H. RILEY, Chairman of the Stalybridge Gas-Works Committee, has been appointed a Justice of the Peace for the Borough of Stalybridge.

* * *

Mr. JOHN COWPER, Technical (Engineering) Assistant, Paisley Corporation Gas Department, has been appointed Assistant Engineer and Manager to the Newton-on-Ayr Gas Company, Ltd.

* * *

Mr. R. H. JOHNSON has rejoined the staff of McLusky & Blincoe, Horsforth, Leeds, and will represent the firm in North-East England.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Obituary

Mr. FREDERICK YOUNG, Assoc.M.Inst.C.E., for the past 22 years Gas Engineer to the Skegness Urban District Council, died in Skegness Hospital on April 16. He was 59. Mr. Young completed his education at Workington School of Science, and served his apprenticeship at Cockermouth and Carlow Gas-Works, being under his uncle, Mr. L. Young, at the latter works. He remained for a further three years as Assistant Manager, and then went to Brampton, where he was Manager for eight years. Throughout the last war he served with the Royal Engineers. Following his war service he was Assistant Manager at Bishop Auckland for over three years before taking charge of the Skegness Undertaking in April, 1923. At a special meeting of the Gas Committee on April 17 tributes to Mr. Young's work and worth were paid by the Chairman and others.

* * *

Mr. GEORGE PATE, O.B.E., J.P., late Manager of the Carron Company, Ltd., died at Larbert on April 14. He joined the firm in 1894, and was appointed Assistant General Manager in 1900 and General Manager in 1912. He retired in 1944. He was 84 years of age.

Diary

April 27.—Manchester District Association of Gas Engineers: Annual Meeting, Engineers' Club, Manchester, 2.30 p.m.

April 28.—London and Southern District Junior Gas Association: Visit to Ministry of Works Housing Site, Northolt, 2 p.m.

April 28.—Western Junior Gas Association: Meeting at Bristol Gas Company's Offices, Colston Street, 2.30 p.m.

May 3.—Southern Association of Gas Engineers and Managers: Grosvenor House, London, 2.30 p.m. Address by A. E. Sylvester.

May 4.—North of England Gas Managers' Association: Annual Meeting, County Hotel, Newcastle, 2.15 p.m.

May 7.—B.G.C.: Domestic Development Committee, Gas Industry House, 2.30 p.m.

May 8.—British Gas Council: Gas Industry House, 2 p.m.

May 8.—N.G.C. : Central Executive Board, Gas Industry House, after the meeting of the British Gas Council, approximately 3.30 p.m.

May 9.—National Benzole Association: Annual General Meeting, Wellington House, Buckingham Gate, S.W. 1, at 3.45 p.m.

May 10.—Eastern Counties Gas Engineers' and Managers' Association: Spring Meeting, Grosvenor House, W. 1. Presidential Address of J. Hunter Rioch.

May 12.—Manchester and District Junior Gas Association: Meeting in Liverpool. Paper by F. Bell (Liverpool).

May 14.—Women's Gas Council: Executive Committee, Gas Industry House, 12.45 p.m.

May 23.—B.C.G.A.: Meeting of Members in Scotland: Central Station Hotel, Glasgow, 2.30 p.m.

May 25.—North of England Gas Managers' Association (Auxiliary Section): Annual Meeting, Newcastle, 2.15 p.m.

Codes on Gas Installations

The Codes of Practice Committee have issued for comment the drafts of four codes (Building series) on Gas Installations: Code 3.421, Installation of Gas Service pipes; Code 3.4211, Gas metering and consumers' control; Code 3.422, Gas installation pipes; Code 3.4233, Space heating by means of independent gas appliances (single family dwellings).

These have been prepared by a Committee convened by the Institution of Gas Engineers, and it is hoped that their wide circulation will result in useful comments by all interests concerned in the supply and use of gas. Any comments received will be carefully considered before the final revision of the codes, with a view to making these as comprehensive and accurate as possible, and so increasing the standard of efficiency in the field of work to which they will be applied. Copies may be obtained from the British Standards Institution, 28, Victoria Street, S.W. 1 (price 2s. each).

All Sections of the Aluminium Industry have combined to stage an exhibition that will tell the story of aluminium and its varied applications in the nation's post-war reconstruction plan. The exhibition opens at Selfridge, Ltd., on May 30, and will close on June 30, after which date it is hoped to transfer it to the leading provincial cities. The main purpose of the exhibition is to show what aluminium can do in peace, and the major portion of the space is devoted to this section. There will be planned kitchens and other rooms and a luxurious bathroom, in all of which aluminium is used to the best advantage. Enquiries regarding the Aluminium Exhibition should be addressed to the Industry's Public Relations Officer at 36, Granville House, Arundel Street, W.C. 2. (Telephone : Temple Bar 0591.)

North British Association of Gas Managers

The Spring Meeting of the North British Association of Gas Managers was held on April 12, in the Town Hall, Johnstone, when the President, Mr. ALEXANDER JAMIESON, Engineer and Manager to the Johnstone Gas Department, welcomed a large attendance.

On behalf of Johnstone Corporation a civic welcome was extended to the delegates by Provost W. B. GIBSON, J.P. The Association, he said, was 84 years old and had met only once in that long time in Johnstone—namely, in 1921. They were gratified to know that their esteemed Gas Manager, Mr. Jamieson, had been appointed President.

Reference was made by the PRESIDENT to the death of Mr. A. S. Nisbet, formerly Manager at Paisley, who became an Ordinary Member in 1919. He was elected President in 1933, and became a Life Member in 1942.

The PRESIDENT extended a welcome to the Institution President, Mr. S. E. Whitehead, and to the Secretary, Dr. W. T. K. Braunholtz.

Mr. WHITEHEAD, extending his good wishes to Mr. Jamieson for his term of office, said that on the Council of the Institution they had had the advantage of the help of many eminent members of the North British Association, and one of them, Mr. Jamieson, of Edinburgh, had preceded him in the chair.

The PRESIDENT then gave his Address (see p. 531).

Mr. T. S. LOCKHART (Rothesay, Senior Vice-President) proposed a vote of thanks to Mr. Jamieson, and Mr. J. M. DOW (Kirkcaldy), seconding, said that to many of their colleagues the difficult war years had been a time of travail. The Address would come as a message of inspiration, encouragement, and hope. The history of the Johnstone Undertaking was one of successful management and enterprise, and the Burgh was to be congratulated. The progress of the undertaking under their President had been remarkable, especially during the war years. The problem of meeting an ever-increasing war load had not prevented them from stretching out a helping hand to their neighbours. The purchase of the Kilbarchan Undertaking from the Caledonian Gas Corporation and the joint working arrangement with the Paisley Undertaking were pleasing features, demonstrating a spirit of mutual goodwill.

On the invitation of Johnstone Town Council members were entertained at lunch, Bailie J. W. SMITH, Convener of the Gas Committee, presiding. Major GUY LLOYD, M.P. for East Renfrewshire, proposed the toast of "The Gas Industry." He emphasized the great importance of the Gas Industry. The contribution of the Industry to the tremendous housing problem of the immediate post-war years would be of the utmost importance, and its contribution to the development of industry in Scotland was no less vital. While doubtless there would be substantial advantage in a closer integration among the various units comprising the Gas Industry, and some measure of standardization of appliances and regional marketing schemes were desirable, he believed it would not tend to the efficiency of the Industry or its initiative if the State were to exercise control over it, and if the various units were to be compulsorily amalgamated. The lamentable experiences of the failure of State control in the mining industry, which the war years had brought into such prominence, had not failed to sound a warning note to those interested in the Gas Industry lest a similar fate befell them at the hands of political and economic theorists. The Gas Industry had suffered perhaps more than any by the disastrous condition of the coal industry during the war; not only had the quality of their coal materially deteriorated, but delayed deliveries had seriously incommoded them. Major Lloyd said he thought it might interest his hearers to have a few facts and figures in regard to the record of the control of the coal industry which was set up in 1942 under the Ministry of Fuel and Power. In spite of these appalling figures and the ghastly failure of control—from the point of view of both output and discipline—Parliament had most unwisely decided, at the request of the Government, to extend the life of the Ministry of Fuel and Power indefinitely. Doubtless, in due course, the Ministry would endeavour to get a still tighter control over the Gas Industry, and would not be content until it had got a complete grip upon its various units and amalgamated them under a vast bureaucracy. The prospect for the future of the Gas Industry would depend very largely upon whether or not this important Industry could be saved from the crushing hand of the State. It was not generally realized by the British people that since State control of the mines was imposed in 1942, a total of 12,500 more men succeeded in producing 21 million tons less coal than in 1941. The prices of coal under State control had risen enormously. Pithead prices in 1941 were 24s. 0½d. per ton on the average; in 1944 they were 34s. 5¾d. per ton. The average number of shifts worked per week had gone down and the miners were producing less per shift than in 1941, although they were getting much more money. The figures for absenteeism were positively disgraceful. Absenteeism at the coal face had risen from 8.77% in 1939 to 17.5% in 1944, a loss equivalent to 1,721,168 additional shifts. But perhaps the worst figures of all related to strikes and the loss of coal through strikes, about which the Ministry seemed to be helpless. The helplessness of the Trade Union leaders was pathetic. It would be perhaps unfair, said Major Lloyd in conclusion, to put the whole blame for the situation in the mines upon the Ministry of Fuel and Power. Much of the blame must be laid at the door of the Ministry of Labour, who had shown themselves quite incapable of exercising discipline in the labour world.

Mr. S. E. WHITEHEAD, replying, said he had many good Scottish friends in English undertakings and had worked under three of them. He might have no Scottish blood but he had a good deal of Scottish gas practice. Their Industry had been praised for its work in the last war, and it had made progress between the wars. When the story of what they had done in this war came to be written they would be proud of it. Their post-war plans were nearing completion, and if they were allowed to develop in their own way they would give more comfort to the nation than ever before. After the war their by-products would be more valuable to the nation than ever and, at the same time, they would be conserving the country's coal supply. Integration was spoken of as if it were a new idea, but they had been tackling this for 10 or 15 years. The President's Address showed what could be done. They paid tribute to Johnstone's enterprising Undertaking and to the enterprise and capacity of the Manager.

Bailie ADAM B. MILLAR, O.B.E. (Edinburgh), proposing the toast of "The Burgh of Johnstone," complimented the small burghs on their work. They had the same problems as large burghs, but much less finance. Local administration, in his view, was more important than Parliamentary. Parliament made laws, but the local authority carried them out.

Provost W. B. GIBSON, replying, said they were fortunate in having a very successful gas undertaking.

Ex-Provost A. H. ROSS, J.P., proposed the toast of "The Guests," and the County Convener, Sir ALEXANDER T. TAYLOR, K.B.E., replied.

Institute of Fuel

The Annual Corporate Meeting of the Institute of Fuel was held at the City and Guilds of London Institute, South Kensington, on April 12. Dr. E. W. SMITH (President) was in the Chair.

At the opening of the meeting the members expressed their pleasure at the return of Mr. P. C. Pope after a rather serious illness.

The following were elected to fill six vacancies on the Council: B. Dunglinson (Director, Electroflo Meters, Ltd.), I. Lubbock (Fuel Engineering Dept., Asiatic Petroleum Company), O. Lyle (Director, Tate & Lyle, Ltd.), H. E. Partridge (Partridge, Earp, & Partners), J. N. Waite (Central Electricity Board), Dr. J. W. Whitaker (Principal, Huddersfield Technical College).

The Report of the Council for the past year stated that the outstanding features of the year's work were the successful application to the Board of Trade for authority to revise the Articles of Association, the drafting of an Education Scheme to implement the revised Articles, and the agreement by the Council of By-Laws under which Sections of the Institute may be formed in different parts of the country. The Revised Articles came into operation on April 18, 1944. The Education Scheme included the proposal that the examinations should be held annually at the City and Guilds of London Institute. The work of drawing up the curricula and syllabuses is proceeding.

The report also referred to the Special Fund for developing the work of the Institute during the next five years, when it is hoped that the membership will have reached 5,000 as compared with the present 2,000. The aim was £5,000 per annum for five years, and although there has been no general appeal, nearly £4,000 per annum has already been promised or subscribed. Among the contributors is the Gas Light & Coke Company.

The PRESIDENT, in an Address on the aims and objects of the Association, spoke of the excellent work now being done by the eight Sections of the Institute, and dealt with the arrangements that are being made for the future. After mentioning that the Council was arranging for papers on specific subjects, such as waste heat recovery, to be allocated to the Sections where the particular subject would be most suitably discussed, he said the Section Chairmen and Secretaries had agreed to make arrangements for periodical meetings with the National Smoke Abatement Society to deal with the technical side and not the political or legislative side of the problem, the understanding being that the particular Local Section concerned should be responsible for organizing the meetings and making all necessary arrangements. He also mentioned that an Exploratory Committee has been formed to deal with the arrangement of meetings on such subjects as pulverized fuel, its production and utilization, on the lines that other subjects had been dealt with during the past session. Arrangements were also being made for visits to works as soon as conditions permitted, but he impressed the necessity for selecting works which would be of real interest rather than to accept offers to visit works of less interest, and where, perhaps, some special inducement by way of facilities for transport, &c., might be offered.

Referring to the Special Fund, the President expressed satisfaction at the response already received, and said the Finance Committee was now considering how it should be administered. The sole object of the Fund was to make up deficiencies between revenue and income during the intervening period, when it was hoped the subscriptions from the membership would meet all calls.

Finally, he indicated that the Institute aimed at assisting in the whole field of fuel economy by demanding qualifications on the part of those seeking membership, to assist the Ministry of Fuel and Power in all its activities, and to aid in developing a fuel consciousness both on the industrial and domestic side.

Housing Exhibition at Staines

During the last week in March Staines Urban District Council staged a Post-War Housing Exhibition and Conference at the local Town Hall. On the second day there was an open meeting addressed by Mr. F. W. Raper, J.P., Chairman of the Staines Urban District Council. Two interesting talks followed, the first given by Miss P. J. Owen, A.R.I.B.A., A.A. Diploma, entitled "The Houses we Want —Layout and Planning," the second by Miss Jean Thompson, B.Com., Manager of Housing Estates, Southall Borough Council, who chose as her subject, "Can We Solve the Housing Problem?" The public took full advantage of Mr. Raper's invitation to ask questions at the close of the talks, and a lively discussion ensued.

Two B.C.G.A. films, "It Comes from Coal," and "A New Kitchen," were shown each day. The younger members of the audience were obviously impressed by the innumerable by-products which come from coal.

In the hall where the Exhibition was staged the Gas Light and Coke Company had installed a model kitchen. Well over 700 people visited the exhibition, and the attendants on the stand were kept busy answering questions about the gas appliances, especially about the Fulham coke grate and the "Ascot" RS52 water heater.

On the second day a delegates' meeting took place in the Council Chamber, the subject being "Houses from the Housewife's Point of View." The delegates asked some searching questions, which were ably answered by Miss Owen, Miss Jean Thompson, the Engineer and Surveyor of Staines Council, the Chief Sanitary Inspector, and the Engineer and Rehousing Officer. The following Associations were represented: Christchurch Mothers' Union, Co-operative Women's Guild, the National British Womens Total Abstinence Union, Northolt Housing Estate, Mothers' Union, Laleham, Mutual Friendship Hour, Townswomen's Guild, Women's Institute, Laleham, Women's Institute, Stanwell, Worple Housing Estate, Staines Council Housing Committee, and Public Health Visitor, Staines Urban Area.

[A photograph taken at the Exhibition was published in our issue last week, p. 498.]

The Gas Industry in Australia and New Zealand

We have just received the latest issue of the *Statistical Year Book of the Gas Industry in Australia and New Zealand*, compiled and issued by the Statistical Department of the National Gas Association of Australia. The figures now given carry the story of the Australasian Gas Industry up to the end of 1943. The 40 foolscap folio pages, mostly of tabulated figures, show in detail the operating results of practically all the undertakings in the area covered by the Association, and where individual figures are lacking the Statistical Department has adopted "relative bases" for converting the returns to a 100% standard, the figures supplied being related to the total amount of gas made in the appropriate area and expressed as a percentage basis thereof.

A new record figure of 26,300 million cu.ft. was established for sales of gas in 1943. This was 10.6% higher than the sales for 1942, and 38.6% above the 1939 figure of 18,970 million cu.ft. All States of the Commonwealth recorded increases over the previous year's sales of gas. Substantial advances for domestic purposes, as well as for commercial and industrial uses, were made in the areas supplying information. The total number of meters in commission in Australia at the end of 1943 was 1,020,000, against 1,002,000 at the end of 1942 and 764,000 in 1930, while the total in New Zealand was 198,000, compared with 201,000 in 1942, and 224,000 in 1918, the earliest year for which reliable statistics are available.

Total sales of coke, tar, and tar products were higher than for 1942. Production of sulphate of ammonia declined, but ammoniacal liquor production was almost double that of the previous year. The total number of persons employed in gas undertakings was approximately 8,660, which was 200 less than in 1942; the number of men employed was about 15% below the total for 1939. Although the number of meters in New Zealand showed a decrease, the New Zealand gas undertakings in 1943 sold approximately 3% more gas than in the previous year.

For the first time all gas undertakings in Australian metropolitan areas (the areas of the capital cities) replied to the Association's questionnaire ; 64 provincial undertakings, representing 88% of the gas made in provincial areas, supplied statistical data. Information was also received from 18 undertakings representing 83% of the gas manufactured in New Zealand. Capital invested in the Industry in Australia reached a total of £22,900,000 in 1943, compared with £19,400,000 in 1937, but in New Zealand there was a slight decline, the figure for 1943 being £3,480,000, against £3,790,000 for 1938, the earliest recorded year.

To Celebrate its Jubilee Year the Association of Tar Distillers will hold a luncheon at the Savoy Hotel on May 30.

The Fourth Ordinary General Meeting of the Society of Glass Technology (North-West Section) was held on April 14 at the Gas Showrooms, Radiant House, St. Helens, at which the Chairman was Mr. A. E. Boulton. A Paper entitled "Glass to Metal Seals" was given by Mr. H. Marshall Bateson.

Solid Smokeless Fuels Federation

Mr. Ralph Alsop, C.B.E., has been appointed as the Chairman of the Solid Smokeless Fuels Federation for the current year, in succession to Colonel H. C. Smith, O.B.E., who was the Chairman of the new Federation for the first year.

It was in 1944 that the formation of the Federation was announced, with membership comprising the National Federation of Gas Coke Associations, the British Hard Coke Association, and the South Wales Anthracite and Dry Coal Committee. This was the outcome of the successful co-operation which had existed between the three industries for some years previously, they having come into voluntary alliance by agreement on a common policy to further the production and development of solid smokeless fuel, and to strengthen the work each had been separately pursuing.

The Federation has actively under consideration the post-war position in relation to solid smokeless fuel, the production, quality, and marketing of such fuels, particularly in the direction of fostering the trend towards their extended use in the domestic market. Considerable investigation has been made by the Federation's Technical Committee with regard to the design of new appliances for space heating, hot water supply, and cooking, and desirable features for incorporation in new designs have been specified after consultation with manufacturers. The standard of performance and design which the new appliances achieve represents a most notable advance on pre-war practice, and considerable benefit will accrue to the consumer due to the increased efficiency and convenience which will be realized in the utilization of solid smokeless fuel.

The Technical Committee has already prepared a number of publications which have been of great assistance to domestic and industrial consumers, and these will be supplemented in due course by other appropriate material.

The provision of suitable solid smokeless fuel for domestic use and appliances in which they can be most effectively burned will undoubtedly make an important contribution towards the achievement of more efficient heat service in the post-war home.

The "Lancastrian" Kitchen at Manchester

The "Lancastrian" Kitchen is attracting daily large numbers of housewives, business men, architects, and builders to the City of Manchester Gas Department's Showrooms in the Town Hall. Warm praise has been bestowed upon this conception of the kitchen as the workshop of the home—the outcome of searching investigations by Scientific Kitchens, Ltd., of Manchester, 2, in collaboration with the Sales and Service Staff of the Manchester Gas Department.

All the components have been arranged in sequence to suit the order of work, thus giving planned movement. To cut down individual cost, the equipment has been designed in single units capable of being mass produced, thus incorporating the principle of unit formation. All plumbing is self contained for each unit and carried throughout in copper tubing. The final connexions are readily made when the units are placed side by side. Units can be supplied singly or in any combination to suit the available space. It is not a kitchen of cupboards but of storage where most needed, side by side with the equipment demanded by the modern housewife.

The fuel service throughout is by gas, but electricity is utilized for lighting, ventilation, and wireless, and a plug point is available for any desired electrical accessory. An outstanding feature of the "Lancastrian" is the system of ventilation provided, which is described under Unit E.

There are six units in the Kitchen at Manchester, namely:

Unit A.—Gas refrigerator. In various sizes to suit the family requirements. The unit includes vegetable storage in wire trays (conditioned by air circulation) below the refrigerator.

Unit B.—Gas cooker, with "Regulo," in any desired size of oven, with grill and boiling and simmering rings, housed in a perfectly equipped working recess, which includes a boiling water unit by "Ascot," a special stainless steel sink for cooking purposes and vegetable preparation, adequate working space, electric light, cupboard space for utensils, and steam cooking odour-extracting device all housed in one complete unit.

Unit C.—Specially designed ironing board housed in a cupboard providing very generous shelving space—the doors arranged to avoid obstruction whether it is desired to use the ironing board or have access to the shelves. A special "plug-in" gas point is provided in this unit for the gas iron, with provision also for electric iron.

Unit D.—An "Equator" gas water heater, capacity of 13, 18, or 25 gallons, supplies large or small quantities of hot water at any tap which it serves. Hot air chambers are provided in the cupboard space for airing or drying clothes.

Unit E.—Air circulation trunking with a silent Nine Vent-Axia extraction fan ensures ventilation throughout the kitchen. An extension loud speaker and Smith electric clock are included in this unit.

Unit F.—A stainless steel kitchen sink with stainless steel drainers is placed near the window where the light is good.

Unit D can be turned into a drying cabinet by replacing the "Equator" gas water heater with a gas heated drying unit, and this would be done where other means of water heating have been provided in the house.

Presidential Address, North British Association*

By ALEXANDER JAMIESON, Johnstone

THE Gas Industry, like all other industries, has had a trying and difficult time during the war years, and, with demands frequently exceeding plant capacity, scarcity of suitable gas-making coal and shortage of staffs to operate the plants, these difficulties did, at times, seem insurmountable. Each problem as it arose was tackled with courage and initiative, and how well the difficulties were surmounted is proved by an increase of 16% in gas sales in the fifth year of war as compared with 1939. The Industry's contribution to Britain's all-out war effort has been something of which all personnel are entitled to feel proud. No operation for which heat was required was ever too large or too small to be tackled.

Post-War Planning

During the war years a great deal has been heard of post-war planning. The Gas Industry, like most other industries, has been endeavouring to get ready for the changing conditions of the immediate future. Any suggestion that the Industry is in a worse position than other industries, or, indeed, is in particular need of drastic reform, should, I think, be deprecated. An Industry which is processing over 20 million tons of coal per annum, and returning to the consumer in the form of refined and smokeless fuels almost 80% of the calorific value of the original fuel, has no need to adopt an apologetic attitude in its relations with the general public. That there are, however, weaknesses in the structure of the Industry may be freely admitted. In the excellent report on the Post-War Planning of the Industry put forward by the British Gas Federation, constructive recommendations were made which would deal effectively with such weaknesses. It is perhaps natural that some of these recommendations were not acceptable to all sections of the Industry, and it is fortunate that the Minister of Fuel and Power has set up a Committee under the Chairmanship of Mr. Geoffrey Heyworth to take further evidence, to report upon the structure and organization of the Industry, and to advise as to the changes necessary to develop and cheapen the supply of town gas. The report of this Committee is awaited with the greatest interest and concern.

No doubt the most controversial aspect of the question is that of ownership, coupled with proposals for so-called integration. As engineers we should have no more than a passing interest in the question of ownership, but, with the formation of so many new Associations to protect the different interests involved, it becomes more and more difficult not to take sides. It would take a courageous man to say definitely that one type of ownership has proved better than another, as there can be no doubt that there are outstanding examples of efficient and progressive undertakings owned by both companies and municipalities. Where would the Industry have been to-day if it had not been for the outstanding services rendered to it by the Gas Light & Coke Company and the Birmingham Corporation Gas Undertaking?

The question of integration, or amalgamation, itself, however, concerns all engineers intimately, and it behoves every one of us to view possible developments with an open mind, free of all self-interest. Integration, as we have known it in the past, has often been of undoubted value, and even without compulsion it will, I venture to prophesy, be very much to the fore in the post-war era. Unfortunately, a great many promising schemes are being held up, and it is to be hoped that the Ministry will soon give some definite indication of what its policy is to be. We are all agreed that some degree of integration will be a necessity in the future if the Industry is to take its proper place as a fuel industry, but the whole question is bristling with difficulties. The mere size of an undertaking is no index of its efficiency, and it is not by any means the largest undertakings which are supplying the cheapest gas. At the same time it should be noted that selling price alone is not the only factor in the assessment of the efficiency of a gas supply. Service given with the gas supply is of at least equal importance. Cheap gas without good service will not be sufficient for the post-war world.

Integration must be considered in relation to the Government's fuel policy as a whole. Properly and scientifically applied it would conduce to fuel conservation, but the claims of rural districts and even isolated farms to a gas supply (among other social amenities) must also be borne in mind. The use of surplus coke-oven gas must also have its place in any well-considered organization of fuel supplies, but it should be insisted that the coke ovens bear their part in carrying the statutory obligations of the purchasing gas undertakings with regard to quality, purity and, above all, continuity of supply.

Finally, centralization can be carried too far. All the benefits of integration may be realized by the amalgamation of contiguous areas of gas supply without eliminating the manufacturing stations, since service, and particularly the application of gas to industrial purposes, is more affected by the size of the selling organization than efficiency in gas manufacture.

* Presented at the Spring Meeting in Johnstone on April 12.

The Johnstone Gas Undertaking

In a previous paragraph reference was made to supplies to rural areas, and as we in Johnstone have had a little experience of this, it may be of some interest to sketch the history of the Undertaking under municipal control.

The Undertaking was acquired by the Town Council for the sum of £22,000 in the year 1879, when the sale of gas was 19 million cu.ft. per annum. The area of supply was the Burgh of Johnstone and the neighbouring village of Elderslie. The progress of the Undertaking was steady if not spectacular, and when in 1912 a scheme of works reconstruction was required the then Gas Committee decided to modernize the works. The horizontal retort plant was replaced by an installation of Wilson (Glasgow) intermittent vertical retorts, complete with coal-handling and elevating plant. New purifiers of a capacity of 1,000,000 cu.ft. per day and a 40,000 cu.ft. per hour station meter were also installed, although the maximum day's output at that time was only 350,000 cu.ft. That the foresight of the management has been more than justified is proved by the fact that the purifiers and station meter are still in use, although the maximum daily demand has now risen to 1,200,000 cu.ft. A gasholder of a capacity of 350,000 cu.ft. and prepared for an additional lift was also erected in that year.

On completion of these extensions the Department began to look for new business, and it was not long before the supply was extended to the villages of Howwood and Brookfield. These ventures met with immediate success, and by the end of the year 1928 the question of carbonizing plant had to be again considered. After careful consideration further progressive action was taken, when a section of the intermittent retorts was scrapped and replaced by an installation of Glover-West 50 in. continuous vertical retorts, complete with waste-heat recovery plant, hoist for coke handling, and an outside coke bunker of 50 tons capacity, coal-handling being carried out by means of the Babcock conveyor installed with the Wilson plant. This conveyor is still in use, and the method of maintenance adopted for it may be of interest. Each month approximately 8 ft. of the chain is removed and replaced by 8 ft. which has been previously removed and repaired. Thus, as the conveyor is 210 ft. long, it will be seen that each section does just over two years' work before being removed and repaired. Maintenance costs are very evenly spread out with this method, and no anxiety as to the condition of the conveyor is experienced.

The waste-heat boiler erected with the plant was a natural draught vertical boiler, but as the blow-down pipe had been fitted in a position 4 in. above the bottom tube plate heavy scale formation trouble was experienced, causing tube leakage and a distorted tube plate. An endeavour was made to overcome this by fitting a continuous blow-down from the bottom tube plate, but although the boiler has worked for a period of 14 years it was unreliable, and has now been replaced with a horizontal induced-draught boiler.

By 1932, when I took charge, the output had risen to such an extent, and the Wilson retorts which had been kept as standby were so far beyond further use, that additional carbonizing plant was essential. An additional two retorts were, therefore, added to the Glover-West bench and the Wilson retorts were completely demolished. On the completion of this extension the question of works capacity relative to future commitments and sales was very carefully considered, and a complete scheme of works reconstruction was decided upon to be spread over six years.

Storage was the first section of the plant to receive attention. There were two holders in use, one spiral guided of 350,000 cu.ft. capacity, and one a column-guided two-lift holder of a capacity of 250,000 cu.ft. As the latter when fully inflated gave a pressure of only 4 in., while 6 in. was required at peak periods, and as the condition of sheets and supports was very bad, it was decided to demolish and replace it, using the same tank, by a spiral-guided four-lift holder of 500,000 cu.ft. capacity. The pressures thrown by this holder are 5 in., 8 in., 10 in., and 12 in., according to the number of lifts inflated. and the construction has been in every way satisfactory, although difficulty was experienced with the concrete " dumpling" which had to be cut to accommodate the two inner lifts. As the clay under the concrete showed signs of slipping if too much was going to be taken off the " dumpling," the inner lift had to be shortened by one plate and specially high rest blocks built to rest it.

While the works reconstruction was in progress, the Gas Committee decided that the time was opportune for extending the area of supply, and at the same time legalizing our position in the County areas where we had no statutory authority. It was decided that a Provisional Order on behalf of the Burgh should be promoted. The total cost of the Order was borne by the Gas Department, and how satisfactory it has been to the Burgh will be understood when it can be said that the total cost was more than recovered in the first year of operation from income-tax rebates.

Under the Order the Undertaking was given statutory authority in an area of 96 square miles, extending from the River Clyde in the

North to Lochwinnoch in the South, and from the Western Boundary of Paisley in the East to the boundaries of Greenock and Port Glasgow in the West. I should like at this stage to pay tribute to the officials, especially Mr. James Ronca, of the then Gas Division of the Board of Trade, for the assistance and encouragement they gave us on this occasion.

The area involved included the villages of Bishopton, Houston, and Crosslee, in which there had been no gas supply. Within the area four small non-statutory Gas Companies were operating at Kilbarchan, Lochwinnoch, Bridge-of-Weir, and Kilmacolm respectively, and the terms of the Order confined the area of these Companies to their then existing limits of supply. The Order allowed a maximum differential rate of 5½d. per therm for the County area over the Johnstone Burgh rates, but this high differential has not been exercised.

As it was not the desire of the Town Council to acquire authority in districts in which there was no gas and not carry out their obligations, the position was again carefully reviewed. It was no small proposition for a small burgh to undertake the supply of gas to a population increased from just over 20,000 to almost 40,000, as it was by the operation of the Provisional Order. It was decided that the first essential was a scheme of high-pressure distribution which would extend to the extreme point in the North—Bishopton—passing *en route* through the villages of Houston and Crosslee, while a branch was taken to the outlying southern districts of the Burgh in which housing developments were taking place. This branch was taken *via* the village of Kilbarchan, the ultimate idea being that a high-pressure ring main would be carried right round the outskirts of the district with supplies to the low-pressure network taken off at various points. That the arrangement is sound has been proved by the fact that the pressure at the works never exceeds 4½ in. W.G., any drop in the mains being made up from the high-pressure main through Reynolds governors. Before work was started on the project, however, industrial development of the area commenced, and a liberal supply of gas was an essential.

As this was additional to the previously estimated requirements of the district, the scheme was again reviewed and the following decisions made: The industrial area, which is some miles from the works, would require a supply from a 4 in. diameter main for its own requirements at peak periods, but as this would leave no surplus for ordinary development it was suggested that an 8 in. diameter main should be laid approximately half way, and from that point a 6 in. diameter main. The consumers were asked to pay the cost of a 4 in. diameter main, plus the cost of all excavating, filling, and reinstating, while the Undertaking would pay the difference in cost between the 4 in. and the 6 in. and 8 in. mains. The cost of the compressors was borne wholly by the Department. This was readily agreed to, and work was commenced on the scheme, complete with duplicate 40,000 cu.ft. per hour compressors.

It was decided to use spun iron pipes with mechanical joints. Every second day the main as laid was subjected to a pressure test of 30 lb. per sq.in. maintained for a period of 16 hours, corrections being made for variations in atmospheric temperatures and pressures. On completion of the scheme of approximately 10 miles a final test of 30 lb. per sq.in. was maintained for seven days. On only one occasion had a section to be relaid, and on examination this was found to be due to an oversight on the part of a workman who had omitted to clean the sockets before inserting certain joints.

Valves were inserted in the main every half mile, and branch pieces with valves and blank flanges were fitted at every road inter-section. It is interesting to record that three of these branches have already been used, although at the time of laying there seemed to be no possibility of gas being required on these roads.

The time taken for the completion of the entire scheme was five months, and in view of the large amount of main-laying which will be required post-war, the costs per yard for the three sizes of main may be of interest : 8 in. diameter, 17s. 9d.; 6 in. diameter, 13s. 9d.; 4 in. diameter, 10s. 9d.

These rates are for the supply and laying of pipes in ordinary tar macadam road, and include opening, filling and reinstating of the road to the County Surveyor's satisfaction and testing.

As the demand for gas had now considerably exceeded plant capacity, and as it was confidently expected that a great deal of new business would follow the installation of the high-pressure system, immediate attention to the works was essential. The wet purification plant had for some obscure reason been installed between exhausters and condensers, and necessitated a vacuum of very often 8 in. to pull the gas through the plant, although only ½ in. was available at retort-house governor outlet. It was decided to replace this plant, in the orthodox position after the exhausters, by a Livesey washer and rotary brush scrubber each of 1½ million cu.ft. per day capacity, and an additional 1 million cu.ft. per day water tube condenser (there was already one of similar capacity installed in 1928) was erected. At the same time all works mains were increased from 12 in. to 16 in. diameter and a heater fitted on inlet to purifiers.

The exhauster drums, which had each a capacity of 30,000 cu.ft. per hour and were badly worn, were replaced by four-blade drums of 40,000 and 50,000 cu.ft. capacity; the original engines, being in good condition, were retained. This conversion was successful in the case of the 40,000 drum, but with the larger one governing has been found to be sluggish, which seems to point to this unit being underpowered.

The boiler plant also required attention as the gas compressors were rated to use 1,300 lb. of steam per hour—a considerable increase on our peak steam requirements. The boiler plant consisted of a 27 ft. by 7 ft. 6 in. Lancashire with a small Cornish to act as standby and the natural-draught waste-heat boiler. It was decided to replace the Cornish by another Lancashire of similar size, and at the same time construct a new pump house in which duplicate feed pumps were fitted. All steam and water mains were renewed and lagged.

The carbonizing plant was extended to 14 50-in. retorts, all that the existing retort house would accommodate. An additional producer was constructed, and the existing producers were extended from 4 ft. to 5 ft. in grate width. Working conditions for the stokers had been poor, due to the low roof, and this was raised 13 ft. and all platforms extended. This alteration considerably improved both working conditions and the appearance of the plant—points which cannot be ignored in the present state of public opinion.

The whole scheme of reconstruction was completed in 1940, and gave the works a capacity of 1¼ million cu.ft. per day with the exception of purifiers, and it was not long before the plant was working to capacity, daily outputs of 1,200,000 cu.ft. being a common occurrence during the winter of 1943. Benzole recovery was commenced in 1941, and the plant, which is of the wash-oil type, has been very satisfactory.

Unfortunately the war stopped all development in the new areas, but it is significant of what the Industry will have to face when I say that a request for gas for over 1,000 new houses was discussed just before the outbreak of hostilities, and many of the existing houses, even when electric appliances have been installed for several years, are clamouring for gas supplies.

As the plant was not being fully utilized and industrial requirements of 20,000 cu.ft. per hour had been erected in a village which is in the Paisley area of supply, a joint working arrangement was come to with the Paisley Undertaking whereby we would supply 10,000 cu.ft. per hour. This joint supply has been a most satisfactory arrangement, and invaluable as a peak leveller. The opportunity of connecting the two gas undertakings for A.R.P. purposes was also taken when the high pressure mains were being extended, and 30,000 cu.ft. per hour Connersville meters and Reynolds governors were fitted at each works so that gas could be drawn from the system to the gasholders at the shortest of notice. One of the many advantages found with this joint arrangement has been that carbonizing plant repairs can be carried out in the summer months, when each of the undertakings is able to carry the whole load and allow the other to do necessary repairs with the minimum of inconvenience.

The Kilbarchan Undertaking was purchased from the Caledonian Gas Corporation in 1943, and gas was being supplied from the high-pressure system 17 days after the Undertaking was taken over. The holder is the only part of the Kilbarchan plant retained. Gas is supplied through a Reynolds governor, and stops were fitted to the holder, which comes into use should the outlet pressure from the governor drop below 4½ in. W.G. The result of this acquisition has been most encouraging, as in spite of the fact that this small Undertaking had been well managed and was most progressive, the sale of gas in the first year after the purchase showed an increase of 25% over the previous year, due no doubt to a reduction in gas rates of 1s. per 1,000 cu.ft.

This scheme entailed considerable capital expenditure, but the courage and confidence of the Johnstone Town Council in the future of the Gas Industry has been more than justified.

The development of the Johnstone Undertaking has been dealt with at such length with a view to showing how difficult the question of integration really is. Here we have a small town taking on such commitments that it is now supplying gas in an area having a total population of almost four times that of the town itself. Gas is being sold at rates and with a service which will compare favourably with those of any large undertaking, and there is no project, be it ever so small or large, which the Gas Committee would not develop if it were proved to be to the benefit of the gas consumers and, therefore, in the ultimate interest of the undertaking.

There is, however, one outstanding difficulty with which a small progressive undertaking has to contend—that of the lack of specialists in the various branches of the Industry. The official in charge of a small or even medium-sized undertaking has to be something of a superman with the qualifications of an administrator, part mechanical and part electrical engineer, part chemist, part heating engineer, with some knowledge of heat treatment of metals, and last, but not least, a sound knowledge of plumbing and gasfitting, and on top of all be able to advise consumers how best to use the hundred and one different appliances available. It is quite impossible for any one person to possess all these qualifications in any considerable degree of perfection, and, although assistance is always willingly given by the makers of the various appliances, the position can never be as satisfactory as it would be if experts on which the undertaking had a right to call were available. Some of these difficulties will, no doubt, be overcome by the formation of Industrial Centres, but it is often the local connexion which can ensure a satisfactory deal, and I would suggest that if adjacent undertakings, by districts or even counties, got together and paid salaries to specialists appropriate to their knowledge, additional business out of all proportion to the additional expenditure would soon result. The headquarters of these specialists could be those of the largest undertaking in the district or county, all undertakings

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would pay their due proportion of the salaries and other expenses, and the services of the experts would be fully utilized.

Education Scheme

The Institution of Gas Engineers' Education Scheme has now been in operation for almost 25 years, and it seems strange that it is not yet giving universal satisfaction in the Industry. It is continually being said that the right type of student is not coming forward, but this cannot be regarded as surprising when the salaries offered to junior gas engineers are very often lower than the wages paid to stokers. The young men of Britain are as sound and adventurous as ever they were (the Battles of Britain and Arnhem surely proved that), but they are not going to enter the ranks of an Industry which asks them to accept responsibility for very often 24 hours per day, and in which they can only hope to earn a salary, if ever, in keeping with their responsibility when they are too old to enjoy it.

One of the anomalies of the scheme is the large proportion of the total students who are specializing in the Gas Engineering side. It is very rarely a student goes forward for the Distribution Diploma, and unless this is altered by making the utilization side of the Industry more attractive, the lack of specialists, which is already being experienced, will become more of a problem than ever. Possibly if the positions in the distribution side carried more attractive designations, such as Distribution or Utilization Engineer, and such officials were given a much higher status in the Industry, there would soon be a response from the students, and less would be heard of the desire to be engineer and manager of one of the smaller undertakings.

A weakness of the scheme as at present being operated is the lack of any course of Administration in the curriculum. Such a course would be of undoubted value to the student destined to fill a chief official's position, and even if it necessitated extending the course of study by one year, such an extension of time would be well worth while.

The question of practical training would also seem to require attention. Under the present system any employee, of even small works, whether clerk or meter inspector, who feels he could carry out executive duties, can go forward for the examination and, provided he acquires the necessary academic qualifications, can qualify for the Diploma. But there remains the difficulty of providing facilities for such men to acquire practical experience. It is realized that very many successful executives of the larger undertakings have been trained in the small works, but conditions in the post-war years may be very different from what they were a decade ago.

Coal

As the question of price and quality of coal assumes a more serious aspect every few months, no Presidential Address would be complete without some reference to it. Looking through some old transactions I came across the following statement in a Presidential Address given at the time of the controversial Coal Mines Bill: " Provided the Boards take wise, broad, intelligent views, the price of coal need not be raised to an extent which will bear oppressively on any industry, and any increase could be compensated for by improvement in the handling and preparation of coal; by the standardization of the sizes of washed fuels; by fixing maximum water contents; by greater attention to accurate weighing; by the careful classification of fuels on a basis designed to suit all the varying classes of consumers, so that ample supplies of suitable coal would be available for all." That statement was made 15 years ago, but so far none of the reasonable suggestions quoted above has been implemented by the coal industry, and the only visible difference in the coal now being supplied to the Gas Industry as compared with 1930 is an increase of almost 150% in the price and a great deterioration in quality.

One of the major mysteries of the war years has been the disappearance from the market of some of the best gas-making coals. Where they have gone no one has endeavoured to explain, but it would seem that a much greater tonnage than formerly has been used in steelworks and as boiler fuels. These coals have been replaced in many cases by fuels which in pre-war days would not even have been considered good enough for steam-raising purposes, and the already harassed gas engineers, whose stocks were carefully kept to a minimum, have been often only too glad to accept delivery of inferior fuels with ash contents often exceeding 20%. In our case fuels which we had consistently refused before the war have been forced on us at a higher price than our regular gas-making coals and, due to the scarcity, have had to be accepted, with resultant difficulties in gas production and irregular producer working. It says much for the flexibility of modern carbonizing plant that there were not serious failures in gas supplies due to this short-sighted policy.

Would the wiser policy not have been to send to the gas undertakings the best quality fuels, thereby reducing the required tonnage with resultant economies in transport? Is it too much to ask of the coal industry in the post-war years that gas-making coals, properly cleaned and graded as was suggested in 1930, shall be reserved for the carbonizing industries? Freedom of choice in purchasing coals should be restored to the gas undertakings, and the price should be fixed on a guaranteed ash and moisture content and other properties.

It is unfortunate that coal, which is the basis of this country's industrial success and our greatest natural asset, should still be the source of so much distrust and ill-feeling between employer and employee. That such lack of co-operation is not in the best interests of the industry or the country is obvious, and unless an early solution of the difficulty is found, our country, after so willingly bearing the discomfort of the war years, is going to experience a period of dangerous uncertainty in industry.

Coal will never again be cheap and plentiful, and we in the Gas Industry should remember this when the question of gas-making plants is being considered in the future. Coal is our greatest national heritage, and before it is so wantonly wasted and exported, as in the past, every constituent which is of value should be extracted from it and used in our own country.

Coke

So long as the Gas Industry is to operate as a two-fuel industry, and the secondary product, coke, takes such a prominent position in the economics of the Industry, it will be essential for us to give it the best possible attention to making it an attractive and efficient fuel. During the war years no difficulty has been experienced in its disposal, but with the end of hostilities markets will be very much keener, and unless great care is exercised the under-cutting of prices, which was a feature of the market before the war, will have a disastrous effect on the existing gas rates. If, however, with the judicious use of carburetted water gas plants, production was kept at a level to suit demand, under-cutting would not be necessary and economic prices could be maintained. Of course, this would give those undertakings not making carburetted water gas an advantage, but this difficulty could be overcome by means of a subsidy which would be paid by those undertakings, in an area or county as the case might be, who derived benefit from the operation of the water gas plant or plants.

Coke, if it is to have any future as a fuel, must receive a great deal more care in its preparation than it has had in the past. Not only must it be carefully graded and de-dusted, but the quality of the fuel, especially ash and moisture contents, must be carefully controlled.

A Coke Association for Scotland has, after many years of endeavour, become an accomplished fact, but it is unfortunate that there are many undertakings who do not seem to realize the value of such an Association and are standing aloof. I appeal to them to consider the question again, and not wait for the difficulty of disposal arising before joining. With 100% membership the Association will be able to do something effective towards organizing the market. As it stands at present, with some of the largest undertakings outside, the position is surrounded with difficulties which cannot be satisfactorily solved.

On the question of research, does it not seem strange in these enlightened days to read that the British Coal Utilization Research Association is to spend huge sums of money in an endeavour to find the best methods of burning raw bituminous coal in open grates? Would it not be wiser if all research funds were pooled and joint research on behalf of the fuel industries carried out? With the present arrangements it would seem that the coal industry still looks upon the Gas Industry as a competitor when, in reality, we must be among its best customers.

Standardization

The question of standardization has been debated now for many years, and in view of the national competition which is likely to be felt after the war, would it not be wiser if some real endeavour was made to overcome difficulties which do not appear to be insurmountable? The first step seems to have been taken by the B.C.G.A. Management Committee, whose recent communication regarding the laying of mains and services to new housing developments should go a long way towards the adoption of a common policy. The attitude taken up by some gas undertakings of charging for gas mains and even meters is now impossible, and what must housing authorities have thought of the Gas Industry's domestic affairs when they found one undertaking prepared to grant nothing, still charging for gas at fairly high rates, while neighbouring undertakings were prepared to give mains and meters free and possibly cookers on simple hire, the service being the only part of the installation for which a charge was made.

The suggestions made by the B.C.G.A. are, it is to be hoped, the forerunner of a scheme of standardization, if not for the country as a whole, at least for districts or counties, and if the housing authorities were properly informed of what the gas undertakings were prepared to do, then a great deal less would be heard of housing committees being pro-electric, and gas would take its rightful place in the new Britain.

A standard policy is equally necessary with regard to the quality and price of gas and of appliances. In the County of Renfrew there are 14 Undertakings supplying gas within an area of approximately 240 square miles, and as the housing programmes under the County Council will intimately affect each undertaking, it may be of interest to examine the position. The price of gas varies from 3s. to 7s. 6d. per 1,000 cu.ft., with variations in calorific value of 375 to 500 B.Th.U. per cu.ft. Now, all these undertakings are using the same coal, and in many cases the same type of plant, and if the very small works using horizontal retorts be ignored we find eight undertakings all using modern gas-making plant and the same coals, but selling gas at rates varying from 3s. to 5s. per 1,000 cu.ft. and at calorific values varying from 375 to 450 B.Th.U. per cu.ft. Similar variations possibly exist in the specific gravity of the gas, and yet the appliances are all expected

Visitors were always pleased to call, and are still, for the table she prepares, if less varied than formerly, remains artistic and inviting. Pondering on the lost delights she plans to have the best kitchen in town. Inevitably she will choose a cooker to match, an ideal in the attainment of which Parkinson desire to collaborate.

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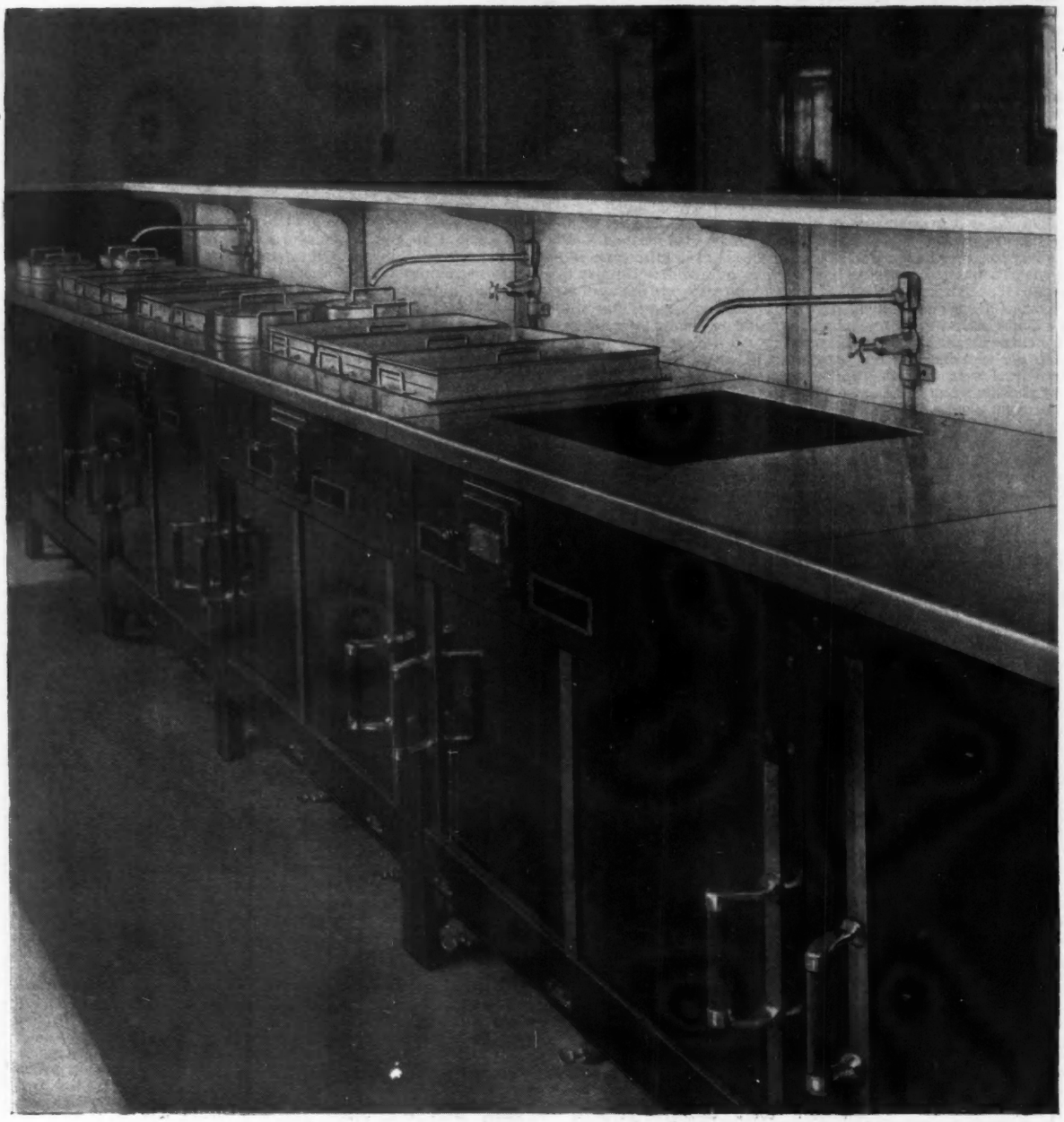

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to work to their highest efficiency under all these conditions. The County of Renfrew is not by any means an isolated example. The same state of affairs is to be found in almost any part of the country. How can the Industry hope to compete under such conditions? It surely is not impossible to have some sort of standard as to price and quality, if not for the country as a whole, at least in counties or over considerable areas.

Such variations not only apply to the products we manufacture, but we find the same differences in the selling of appliances. Some undertakings are more than satisfied if a modern cooker is sold at cost price, thereby saving the cost of a simple hire or free-loan cooker, but another undertaking which may be separated by only a few miles insists on a selling profit of 25% or even 33⅓%. What consumers think of these anomalies it is difficult to say, but they certainly point to gas being a cheap and efficient fuel when such differences have been tolerated for so long.

One of the Industry's most difficult problems in the post-war years will be the question of the elimination of the existing black cookers. This is one of the legacies which an adventurous past generation of gas engineers has left, and as our predecessors took the step of putting out these monstrosities on free loan or simple hire and have undoubtedly through this arrangement popularized gas for cooking, the fact that the black cooker is still with us cannot be laid upon them.

A great deal of time and money has been spent in the endeavour to modernize these appliances by enamelling and chromium-plating, but such methods can only be a makeshift, and all the window dressing will not hide the fact that they are out of date. What is required is a complete comb-out of all such appliances, and replacement by modern "stream-lined" if necessary all-enamelled cookers. The new model should be made of sheet steel, cheap but efficient, and need not have a life of more than 10 to 15 years. The appliances could be charged at economic hire rates which should be the same all over the country, and if any consumer wishes to be different from his neighbour he should be asked to pay for his more elaborate appliance. If such a policy was adopted, less would be heard of the desire to change to other fuels for cooking. It has been proved in the past that in nearly every case where gas has been superseded in the home, the consumer has been driven to this drastic step simply by the desire to get rid of an appliance which has become an eyesore and very often a menace, and to replace it with a modern appliance of any kind available.

Distribution Isolation Devices

A short Paper examining isolation devices for use in the distribution system, together with experiences and expressions of opinion on the installation, use, maintenance, and recording of mains and service valves and the organization of a sectional area scheme, was given to the Yorkshire Junior Gas Association by **Mr. G. Griffiths**, A.I.Mech.E., Distribution Engineer to the City of Bradford Gas Department.

In the course of his Paper the Author said :

Some form of control is obviously necessary so far as installation work is concerned and so far as organizing the distribution area into convenient sections is concerned. On the other hand, air raid experience and air raid precautionary measures have made the question of primary importance, and several winters of exceptional severity may also have assisted in the formation of definite policies in the minds of responsible authorities.

Controls may be of a temporary nature such as the usual gas bag or main stopper, or of an intermediate type such as the emergency water seal or grease plug forced into the main down short lengths of service tubing. On the other hand, mechanical devices of a permanent character fulfil a completely different purpose at, of course, a much heavier cost. A considerable addition to and overhaul of the valve system in the City of Bradford gas area has given me a good deal of experience as to the desirability, difficulty, and advantage of a comprehensive system.

Emergency Stopping.—A number of trials were made to determine the possibility of temporarily isolating sections of main by injecting heavy grease down a gas service. The grease examined was somewhat softer than normal Stauffer lubricant, and the pressure required was supplied by a hydraulic pump to the feed cylinder. For a length of about 20 ft. of 1 in. service pipe (not specially cleaned) with one bend and one elbow the pressure required was in excess of 200 lb. per sq. in., but the seal in a 6 in. pipe filled about 15 in. in length held tight at 5 in. Hg pressure and was found still tight 24 hours later at the same figure. Fortunately, however, it was found unlikely to be required, and the problem of the effective removal of the grease other than by steam heating or solvents was left unsettled. Its possibilities, however, when compared with the ordinary A.R.P. baghole with its need for excavation and inflation of the bag and subsequent attention seem to me considerable.

Permanent Control Points.—Where sectionalization is required, whether for reasons of varying altitude, utilization, or special distribution problems, some type of gas valve is indicated and accepted, but it is a debatable point as to how far isolation of small areas, streets, or consumers should be developed, bearing in mind the advantages in convenience and safety as against the additional cost for installation and maintenance.

Broadly speaking three classes of valve control can be envisaged:

(1) Control points on trunk lines.
(2) Control points on small areas or streets.
(3) Control points to consumers' premises.

Each division introduces its special requirements, such as (*a*) maximum working pressure; (*b*) degree of shut-off required; (*c*) to what extent examination and maintenance *in situ* will be needed; (*d*) pavement or road area available; and (*e*) depth of cover available.

Class 1.—In this case I would suggest that every care to ensure complete effectiveness is necessary, and recommend the installation of a double-faced valve fitted where possible in a satisfactory roomy valve pit. With this type of valve some renewals, greasing, or cleaning can be carried out with the valve closed, and any leakage in the shut position easily detected by means of a test cock communicating with the space between the valve faces.

Class 2.—For less important positions where ease of access and accuracy of shut-off are not so vital, and where room and cover may be restricted, the simple rack and pinion type is very suitable, the flanged unit rather than the double socket body offering easier removal should this be necessary. Over years of service the rack and pinion motion will continue to function without jamming even where rust is present, but this latter will, of course, impair its shut-off tightness. The use of valves for small areas is not generally popular, but at a moderate percentage increase to mainlaying costs a degree of convenience and safety is offered which is worth the price both in capital and in maintenance organization. Such emergencies as major fires or flooding can be countered, ease of mainlaying or making connexions is offered, and the problem of the broken main in hard frozen ground is not so difficult to handle. To those who have been relatively free from this latter trial, I would point out that the rapid detection and repair of broken mains with a staff usually depleted by winter sickness and fully occupied with minor service defects is no light matter. Due to the complete sealing-off by frozen ground, escaping gas will travel for astonishing distances *via* drains and public utility ducts and trial holes are impossible to make at any speed. A tarmac road becomes as hard and tough as reinforced concrete, and setts or flags have to be broken up and chipped out in small pieces. In some cases only valve isolation can readily meet the emergency, and this point has recently been borne out in practice.

Class 3.—The service valve is generally accepted by the Industry, and while the recommended code of practice is so to equip all services 2 in. bore and upwards, many consumers with smaller services having abnormal fire risk or special plant, or blocks of flats, may justify the fitting of such a control. In this connexion co-operation with the tenant in the matter of test operation and effective liaison with the National Fire Service can be very helpful.

Valve Insertion for Area Sectionalization

Originally developed for A.R.P. purposes. This reorganization offers some major possibilities so far as effective supply and pressure control is concerned and necessitated the following valve insertions and cut-offs, all of which were carried out without interrupting the supply to consumers, and between the period commencing November, 1941, and October, 1942:

Valves ...	3 in.	4 in.	6 in.	9 in.	12 in.	14 in.	18 in.	22 in.	24 in.
	1	17	34	34	7	12	2	1	1
				Total 109.					
Main cuts ...	2 in.	3 in.	4 in.	5 in.	6 in.	7 in.	9 in.	10 in.	12 in.
	7	19	24	6	6	5	1	1	1
				Total 70.					

Dip Pipe Syphons	94
Ordinary ,, ...	18
Combined valve pit and flood water pit ...	1

The work was completed without any major snags being experienced, and surprisingly enough in one case only had a by-pass to be used to maintain supply. The bulk of the work was carried out during the spring, summer, and early autumn, and arterial inter-connexions were sufficient to maintain supplies if care was taken in the selection of suitable periods for the larger sizes of main. Obviously some flexibility was required, as proposed valve sites were found on trial to be completely filled by other services, but in general the difficulties were not so great as anticipated, and a more drastic or bolder treatment could with advantage have been effectively operated.

Where cover was short the rack and pinion valve was found satisfactory, and where the site was cramped laterally a vertical valve was used.

Installation Costs

The whole of the work and the supply of material and necessary reinstatement were estimated as follows and found to work out satisfactorily in practice, although, of course, where mainlaying is in

process the amount for labour and contingencies would be very considerably less:

	£	s.
3 in.	12	3
4 in.	13	14
6 in.	19	12
9 in.	28	3
12 in.	39	7
14 in.	47	16
18 in.	72	6
24 in.	100	2

The valves are mainly of the rack and pinion pattern and intermediate sizes of main fitted with adaptors to one of above standard sizes. This may be compared with the following costs for installation under pressure carried out before 1939, and making no allowance for excavation, reinstatement, resurfacing, trial holes or rough labour:

	£	s.	d.
10 in. double-faced valve	30	16	0
12 in. " "	36	18	6
14 in. " "	44	10	6

Renovation of Existing Valves

A number of existing valves were incorporated in the scheme, and although all were operable, much was left to be desired so far as ease of movement was concerned, and it was not possible to obtain a tight shut-off on test (by closing valve and inserting gas bag).

The valves in question were opened up and completely stripped, the following observations being made:

(1) Externally in good order.
(2) Flange bolts, &c., good (changed where doubtful).
(3) Gland joints and bolts not too good and always renewed.
(4) False top or extension frequently faulty and many required stay brackets.
(5) Almost always impeded by rust, this being cleared by a suction ejector operated by compressed air.
(6) Valve springs, valve face, and seats excellent.
(7) Rack and pinion valves generally much easier to move in dirty condition than worm and rack valves.
(8) Very few spindle or rack renewals.
(9) A number of amazing obstructions by other public services installed at a later date:
(*a*) G.P.O. box built on to valve.
(*b*) Electric cables laid on both sides of valve bonnet.

Expectation of life from valves buried in good ground may be almost indefinite and a good deal better than valves installed in pits.

Procedure Adopted for Valve Insertion

Subject to the limitations imposed by the area boundaries decided upon, the actual position of the valve was determined by inspection of the site and by trial holes. Where convenient congested pavements were avoided whether this congestion was below ground or due to foot traffic, and attention was given to the possibility of later obstructions or demolition work and to the effective mounting of wall plates. A good deal of time may be lost if the latter are not mounted conspicuously, accurately, and securely.

Where both main cuts and valves were to be inserted in conjunction with each other, it was usual to complete the valve installation first, as in some cases a by-pass would otherwise have been necessary. When a satisfactory site had been ensured, if any doubt was felt as to the supply beyond the insertion the main was bagged off and a pressure record taken at the point in question—the recorder being kept in operation during the whole of the time work was proceeding. Incidentally, where a main is by-passed and bagged off, always take out the bag or bags nearest to the feed, as in this way there is less chance of a major pressure drop being caused by gas escaping from the bagholes.

Mains of 6 in. and upwards were always double-bagged, and for large diameter mains a vent pipe fitted between the bags has been found useful in some cases.

Wherever possible machine cutters were used on pipes of 12 in. diameter and upwards, and to save time both ends were cut simultaneously. This avoided a main being left with a temporary stopping overnight, and in every case, once the main had been cut, work proceeded until the valve was fixed temporarily if not completely finished and caulked.

In a number of cases, fortunately few, we were unable to make room for the machine cutters, and link cutters were used. With these in good condition and working with good cast iron no difficulty need be anticipated, but where the pipe was laid in poor ground soft spots developed, and it was impossible to prevent the wheels from jamming. Where this occurred the cut was finished with a round nose chisel, and if difficulty in bursting the main was experienced a third cut was made to form a loose end.

This method of cutting has little to recommend it, and due no doubt in part to the pipe not being completely homogeneous an irregular end was left in one or two cases. It was found possible, however, to use a collar at these ends, and the extra overlap allowed a satisfactory joint to be made. Where a double socket valve is required both pipe ends must be true and accurately spaced, and where reasons of access made this type of insertion unavoidable, great care was taken to get a clean cut.

Our usual method was to use a socket and spigot valve, closing the last joint with a collar, as not only does this accommodate an irregular pipe end, but it offers an easier method of replacement should a valve have to be removed.

Valve Maintenance.—In the ordinary way this should not be a heavy item and annual inspection and operation should meet requirements. On this visit the valve box should be cleaned out and road tar chipped from the surface where necessary. Pavement valve boxes are free from this trouble, but it is difficult to avoid the complete covering of road valve boxes during tar spraying. A schedule of valves should be made where full opening and closing can take place and any exceptions carefully indicated. With good arterial interconnexions almost all valves can be so treated without upsetting district supplies provided a suitable time in good weather is selected.

Valve Recording.—All valves other than service valves are logged in consecutive numbers under street index and the headings shown have been selected to cover the most important items; room has been left for a sketch to give easy identification where a group of valves lie closely together. In addition, where a general street index is maintained, the above valves should be included, and for area sectionalization a sheet has been drawn up showing the number, situation, position (open or shut) and relevant details for each valve serving the area in question. Service valves should be recorded in the district book for meters and services, and any inspection or maintenance work carefully noted.

For ease of recognition and identification, special markings have been developed for the various street boxes, and wall plates of individual pattern provided for certain items. These details have been supplied to the National Fire Service to assist them in shutting off service valves to premises where they are working. Where no wall is available the plate may be mounted on a short post or some similar support, but a serious effort is made to find an effective position. A valve box obscured by snow or even a layer of road tar may be very difficult to locate in daylight, and virtually impossible to find at night.

DISCUSSION

Mr. **J. W. Carlton** asked the Author whether sectionalization or isolation of districts under more normal conditions justified the expense involved.

Mr. **Griffiths** said he agreed that in adopting any scheme of sectionalization one would expect to get some return on the outlay and much must depend on the nature of the locality. Sectionalization was particularly suitable to an area of varying altitudes as in the Bradford service area, where the altitudes got down to about 250 ft. above sea-level and up to as high as 1,100 ft. "If you are going to have out-stations, ring mains, &c., sectionalization on either a small or large degree will be valuable, and I would suggest that for the bulk of gas undertakings some degree of sectionalization is absolutely necessary, and would be of general benefit so far as out-district pressure is concerned."

Mr. **V. J. J. Siddons** asked whether the Author had any experience of sealing off by a patent seal to meet the situation in the event of neighbouring broken water mains and flooding.

Mr. **Griffiths** agreed that sealing off was desirable in such circumstances. On the other hand, if there was such sealing off, it meant that there was an area, large or small, without gas.

Mr. **E. Bailey** said he had found rack and pinion valves successful on his district mains. He had tried both double and single-faced, but from the point of view of maintenance and soundness he considered the advantage lay with the single-faced. The difficulty, however, with either of them was that after they had been in the ground a number of years there was a tendency to trouble due to rust.

Mr. **Griffiths** said his only objection to the single-faced valve was that it provided no tell-tale. The more modern types of valve did make provision for dealing with rust, but he agreed that with the older types there was a liability to trouble in that respect.

Synthesis of Methane

The following is a report of the discussion of the Paper by Dr. **J. G. King, O.B.E.**, on the "Synthesis of Methane" ("JOURNAL" of April 4) at a meeting of the Manchester and District Junior Gas Association.

The **President** (Mr. D. Benson) said that the possibilities of the development of the synthesis of methane on a large scale from water gas had been indicated, and the work which the Gas Research Board was doing on this and other matters would in the years to come alter considerably the types of gasmaking plant employed for producing gaseous and solid fuels.

Mr. **J. Hogg** (Stretford) said he had listened to the reading of the Paper with a feeling of frustration. Many of the principles involved were not new to the members. They could not be shocked by the thought of catalysts, or heat interchange, or by temperature control, which three things appeared to be the main sources of difficulty in developing the methane process on a large scale. In ordinary chemical purification processes, such as the removal of hydrogen sulphide,

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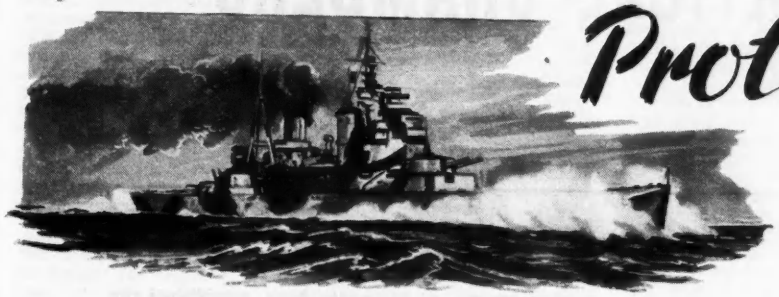

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similar difficulties were encountered, although they did not have the same degree of importance as resulted on the methane synthesis. He was particularly interested in the lower temperature range mentioned. He felt sure many would agree that ranges below 100° C. presented far less difficulties from a gas engineer's point of view than 300°, 450° and other high temperature ranges would present. When they visualized the plants in full-scale operation, the possibility of using high-pressure steam for heating instead of some form of fuel firing was a great attraction, and applied not only to catalysts for methane, but also for sulphur removal. The Industry in the future would not be worried by having to work on pressures considerably higher than those they were faced with at the present time. Once the process was developed and the various precautions for high-pressure work had been taken, high-pressure working had great advantages.

Mr. **H. C. Applebee** (Manchester) was not sure of the economics of the process as at present outlined. In the synthesis of methane one lost both volume and B.Th.U., although the calorific value of the resultant gas was higher. They were threatened in the relatively near future with the drying-up of the sources of gasmaking coal. The time might come, perhaps more quickly than was anticipated, when they would be compelled to use coals of a lower grade. It seemed to him that the Lurgi process, combined with methane synthesis in some form or other, might be an answer to the difficulty which was bound to arise sooner or later. He was not sure whether the Gas Industry would ever reach the position of being manufacturers of methane for the mere sake of manufacture. Although such manufacture was laudable in itself and might be a profitable side-line for the Industry, it was not the primary purpose.

Mr. **J. W. Wood** said he was very interested to hear of work carried out on collateral lines of research, and he thanked the Association for the invitation extended to Dr. Claydon and himself to be present. In the days when the general C.V. was about 525 B.Th.U. there had been difficulty in supplying adequate primary and secondary air to low-pressure gas appliances. People discovered that when the C.V. was dropped to something in the neighbourhood of 500 or just below the appliances became much more easy to use. This led to the adoption of even lower C.V.'s, and values as low as 400 B.Th.U. were now in use in this country, but it was doubtful whether this further lowering had been accompanied by further increase in the ease of appliance operation. If it was desired to obtain increased volumes of gas of reasonable C.V., then complete gasification processes were indicated, but some form of enrichment then became necessary, in which case methane synthesis could be advantageously used and some of the difficulties of oil importation for the manufacture of C.W.G. could be avoided. When examining the various gases forming a combustible matter, they would note that hydrogen was very fast burning. Methane and carbon monoxide were slow-burning gases. There was no simple rule whereby rates of combustion of mixtures could be inferred. If some of the processes outlined by Dr. King were considered, carbon monoxide, which was a slow-burning and stabilizing constituent of the gas, would be replaced by methane, which was also a slow-burning constituent. If Dr. King's processes were followed through, it would be seen that there would be a supply of methane with which the gas could be enriched at awkward times, producing a mixture which would burn with a reasonable flame velocity and correct excessive flame speed of hydrogen. To make the best use of the distributing system the change would be in the direction of raising rather than lowering the C.V. of the gas.

Mr. **H. N. Dann** (Blackburn) was particularly interested in the effect of increased methane content on the combustion characteristics. He thought the synthesis gas process and the Dent process fitted themselves into the future of the Gas Industry, and he visualized a Gas Industry in which the production unit would not be considered a large one at 5 or 10 million cu.ft. per day. If the neighbourhood of 30 to 50 million cu.ft. per day was reached, the processes would fit into production units in a different manner. Economics would be vastly different from what appeared to be the case with the limited size of units to-day. In the future the Gas Industry would be closely tied to the chemical industry; the petroleum industry in America was tending largely to the synthesis of the gases from the cracking processes. He visualized that a new class of technicians must be developed by the Gas Industry, and the operative skill of the workers engaged in the Industry, including maintenance engineers and/or fitters, must be of a very different order in the future if the processes were to become part and parcel of their everyday work.

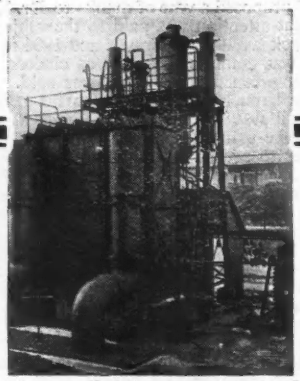
Mr. **J. Albinson** (Manchester) was disturbed in regard to the thermal relationship of the synthesis reaction. The Industry had always prided itself, with justice, that it could treat coal to the best thermal advantage. Recently they had seen collateral progress in the development of the utilization of solid fuel, and the Gas Industry could offer an overall thermal effective use of coal better than any other form of coal processing. He questioned whether an introduction of a process of the type described would maintain that overall thermal efficiency, and suggested that a critical thermal examination of the whole process might condemn it without any further research work on the idea of utilization of methane in that particular manner. He enquired whether the sulphur bodies of a highly steamed vertical gas, or the gases evolved in the last hours of carbonizing in horizontal retorts, were amenable to the catalysts used for organic sulphur removal.

Mr. **A. K. Collinge** (Preston) proposed a vote of thanks to **Dr. King.** The Author had told them that attention was paid to the subject of synthesis of methane as far back as 1902 in France and 1904 in this country. At that time coke was commonly known as cinders, and he imagined it was mainly unscreened coke which was sold. The introduction of water gas owed much of its success to the need to dispose of the coke. Also, oil was low in price. Engineers were able to gain control of the coke market, such as it was, and were content for 10 years or longer to accept that situation. Water gas provided a solution to their difficulties, but they apparently failed to realize, as the years went on, that it was only a partial solution, and the balance of the Industry rested to a considerable extent upon the price of oil. At the present time the Gas Industry was living on the coke revenue and high output. They were continually told they were a two-fuel industry. In his view they ought not to be a two-fuel industry. He did not think the use of coke could be scientifically justified. Complete gasification had been attempted, but success was not attained in supplying gas above 350 B.Th.U. without oil. They had heard Dr. King's remarks as to the inadvisability of supplying gas at a lower calorific value than 450 B.Th.U. There were at present no difficulties as to the disposal of coke; indeed people were literally crying out for it, and the same could be said of gas in many instances. The demand for coke could be expected to continue for some time, particularly as the continent of Europe was an aching void for every commodity, but what would the situation be, say, two years hence? Dr. King had asked if they wanted this plant. He would venture to reply that not only did they want it, but they should have it within two years. He had asked Dr. King if it was a matter of funds and had received the reply that funds alone would not suffice—plant and time were required, together with adequate staff. Plant could be obtained with sufficient funds, and it was a matter of regret that these had not been provided 15 years ago when the problem of coke disposal was becoming increasingly evident. They might consider with profit the manner in which such problems were approached in the U.S.A., where the expenditure on industrial research was many times that in this country in proportion to revenue.

Mr. **Dann** (Blackburn) seconded the vote of thanks.

Dr. **King,** in reply, remarked that several speakers had referred to the probable effect on the Gas Industry of the introduction of such processes as that of methane synthesis. On this point Mr. Dann had the right idea when he spoke of the importance of flexibility. Changes which would give the technician more control in the balancing of his products were bound to be helpful. Possible links with other industries, for example with the chemical industry by the supply of methane, could be helpful, although, as Mr. Applebee pointed out, the production of methane could not become a main issue, but must take its appropriate place in the scheme. Dr. King disagreed, however, with Mr. Collinge in his strictures regarding coke; the Industry could and should have many products, provided the whole formed a flexible system, readily capable of adjustments to suit a variable, seasonal load. He sympathized with Mr. Collinge's impatience at the slow development of methane synthesis, but pointed out that development often had to wait upon inspiration. In this case the main process had had to wait for a method of removing organic sulphur from gases, since the necessary nickel catalyst would not continue to function in their presence.

The Gas Research Board method of removal of organic sulphur compounds would deal with coal gas at any stage in production. He hoped Mr. Collinge would not have to wait for two years before it was possible to envisage the application of the idea of methane synthesis as a technical process. Steady progress was being made now; there was as yet no shortage of funds, and he was sure that no research which showed any real promise would ever suffer in that way. Whether a pilot plant would then at the appropriate stage be constructed would depend upon favourable economic as well as scientific success. Economics would be greatly affected by the size of the unit. Then there was the national aspect of coal quality. New processes such as this could certainly use bituminous coals not formerly described as "gas-making," and thus help to conserve the waning reserves of the highly-caking coals more essential for making metallurgical coke. Both Mr. Applebee and Mr. Albinson had referred to the overall thermal efficiency of the process, and to the possibility that it would be lower than the general high level of gas-making efficiency at present realized. Dr. King pointed out, however, that although it was true that the overall reaction of methane synthesis was strongly exothermic to the extent of 25% of the thermal value of the methane made, much of this would be recoverable by efficient heat interchange, especially if, as was intended, the process was fitted into a wider scheme in which the recovered heat would be utilized. There was no reason to suppose that the present high level of efficiency would be impaired, but even if it were there might be compensations which would overcome small thermal losses. The introduction of a process such as methane synthesis involved new problems, particularly those of heat interchange and possibly of high-pressure apparatus. Mr. Hogg had shown no alarm at the idea of using high pressure, but had advised going outside the bounds of steam engineering. Dr. King did not consider that that would be necessary, since the reaction would be initiated by preheat and not be conduction through walls, and the passage of heat of reaction outwards could be controlled by careful design of the vessel.



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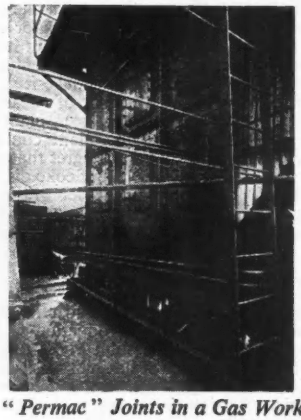

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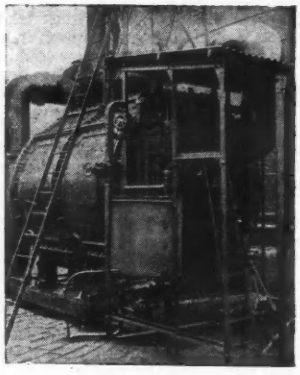

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Products Prices—Stocks and Shares

The London Market April 23.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

The prices of other products are unchanged.

Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172), is in force.*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole, and calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

There is also the Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944.

The Provinces April 23.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland April 21.

New business is slow, but deliveries *ex* Contract are well maintained. Refined tar*: Yield to distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5¼d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7½d. to 7¾d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

There was a distinct contrast at the opening to the activity of the previous week, the number of markings showing a very sharp decline. But as the week progressed conditions became brighter and several good features appeared, especially in the industrial section.

The volume of business among gas stocks and shares showed little change and prices remained very firm. There were fewer changes than usual, although these were all in an upward direction. A feature was the sharp rise of 7 in Mid Southern Utility "C" to 112½, business being recorded at 114, while in the Supplementary List the price of Plymouth and Stonehouse debenture stock closed 4 points higher.

The following were the few changes on the week:

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Gas Light 4 p.c. Pref.	102—105	+2
Ditto 3¾ p.c. Red. Pref.	101—104	+1
Mid-Southern Utility "C"	110—115	+7
Tottenham Ord.	121—126	+2

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Conditions of Appointment and Forms of Application may be obtained from me, and applications must be returned not later than May 5, 1945.

Canvassing, directly or indirectly, will disqualify the candidate.

FREDERICK SMITH,
The Council House, Coventry. Town Clerk.
April 9, 1945.

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This advertisement is issued under authority from the Ministry of Labour and National Service.

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The Council do not bind themselves to accept the lowest or any Tender.

Council Offices, L. GREENALL,
Marple. Clerk of the Council.
April, 1945.

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Town Hall, E. W. TAME,
Birkenhead. Town Clerk.
April, 1945.

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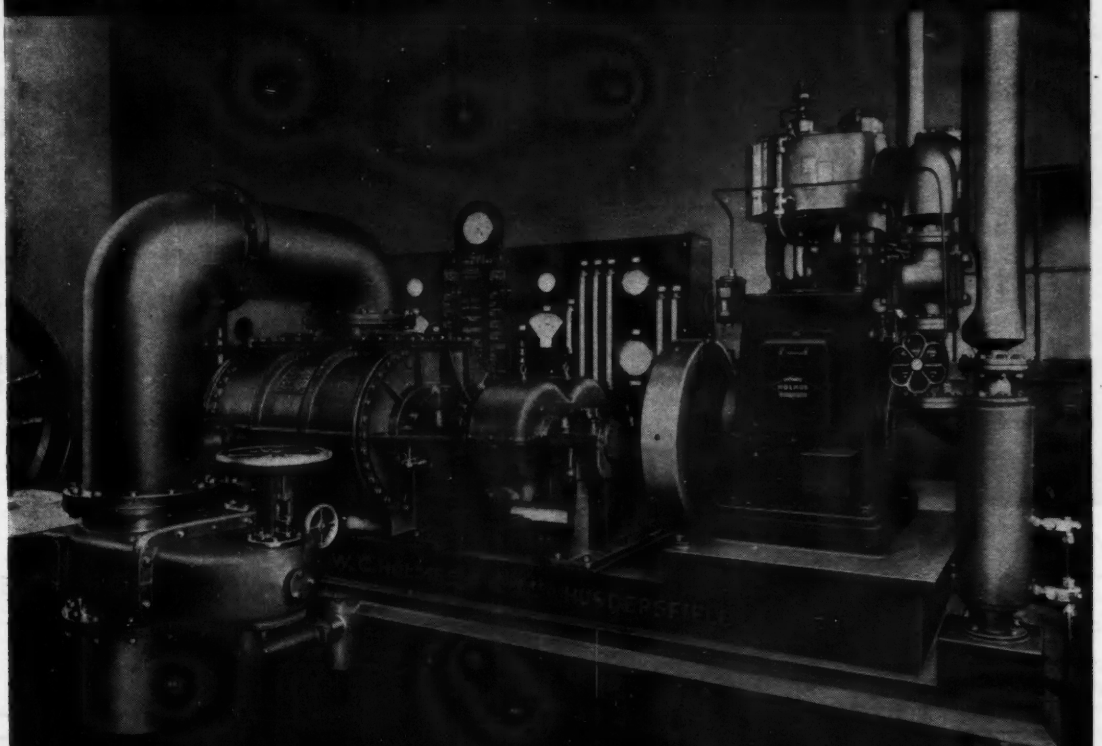

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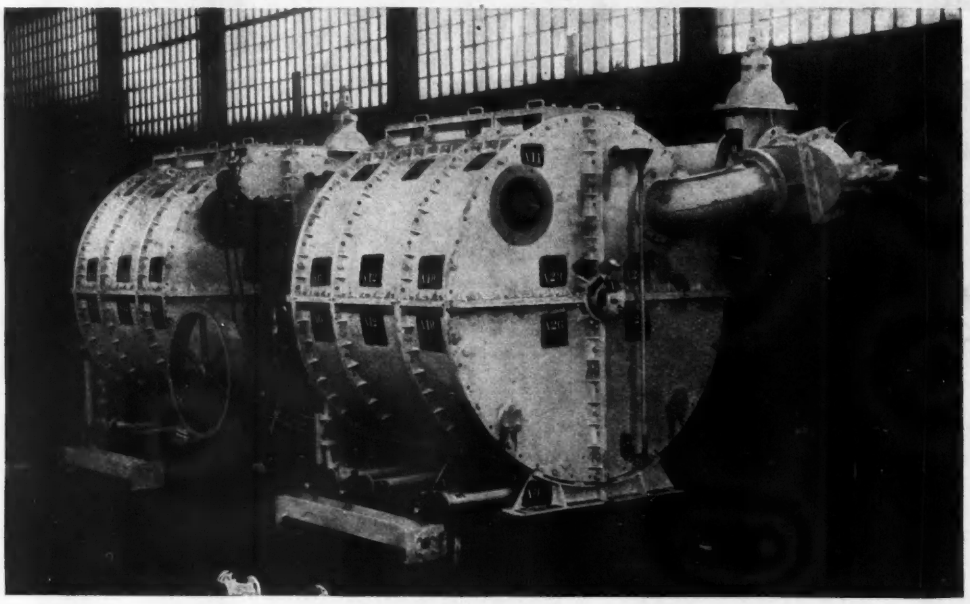

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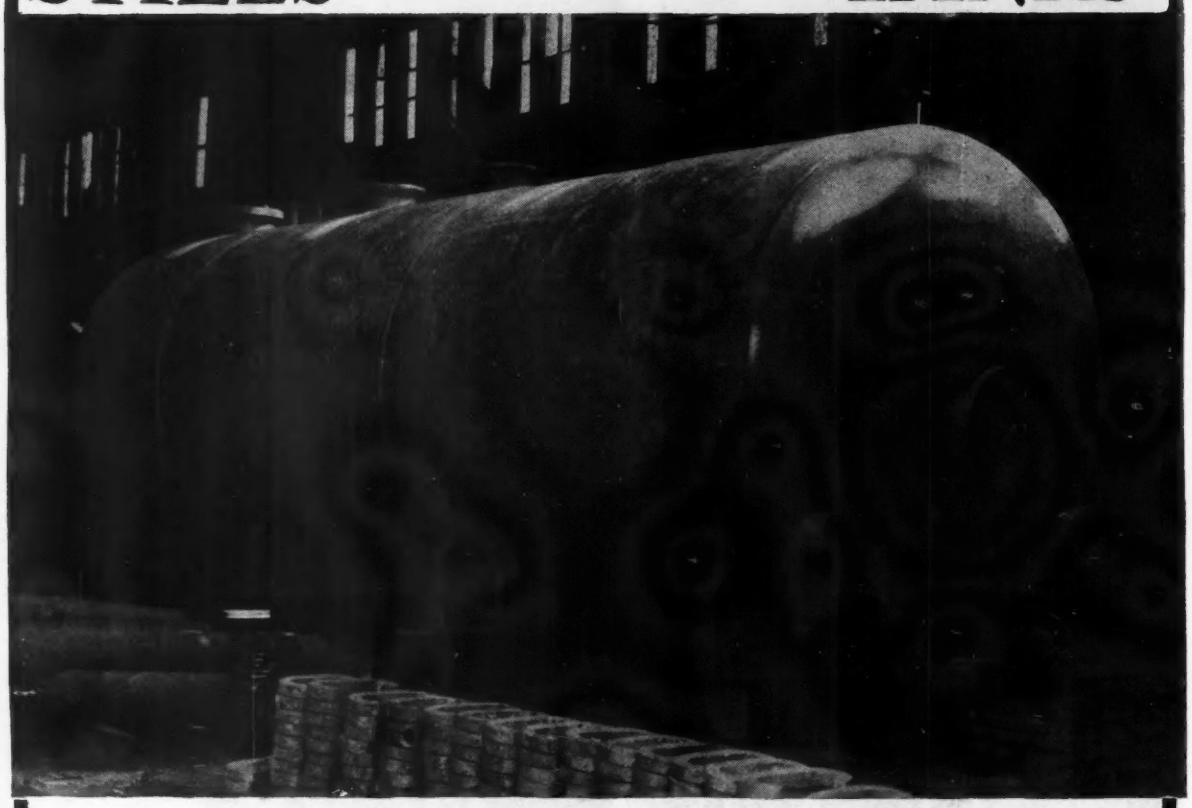

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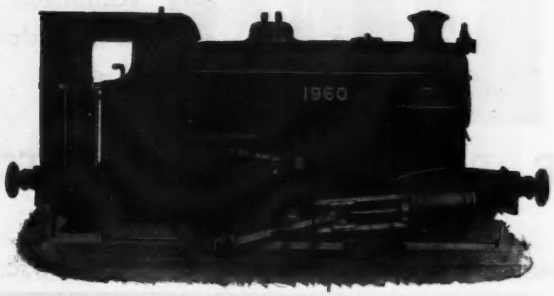

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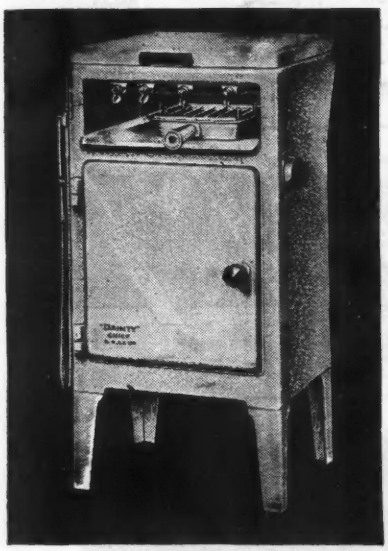

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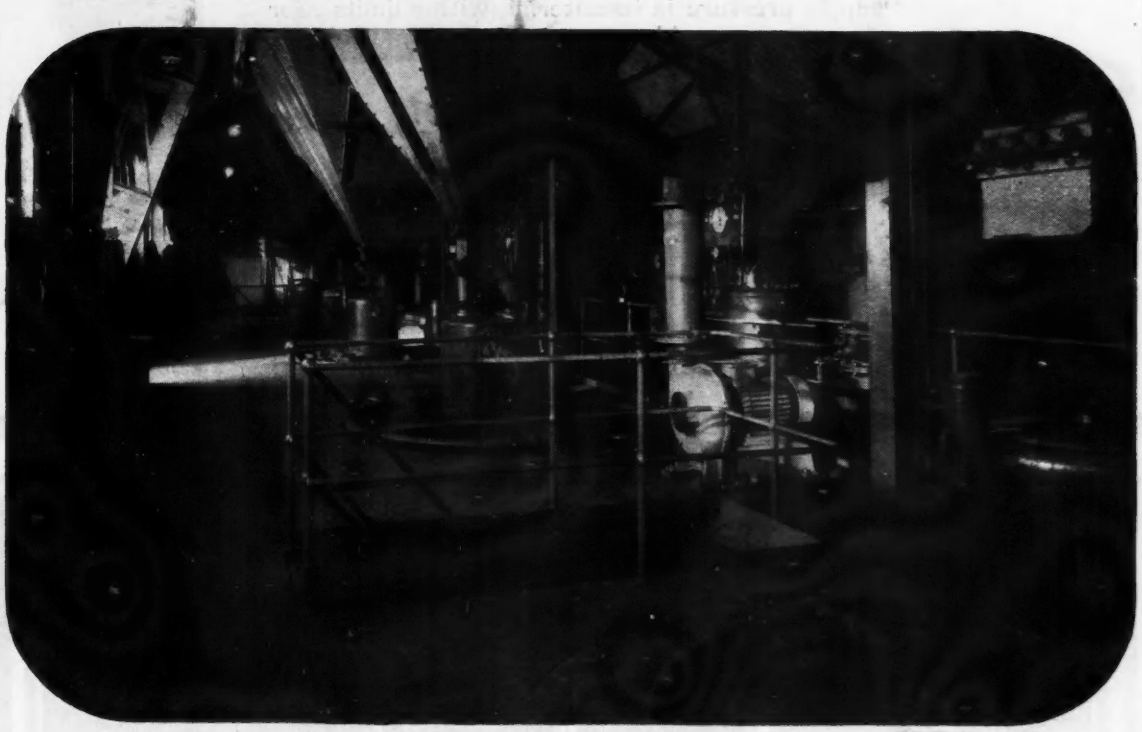
GAS PRODUCER PLANT



General view of operating platform of Producer plant.

Installation of five mechanical self-vapourising Gas Producers each gasifying half a ton of Coke and manufacturing 75,000 cub. ft. of 130 B.T.U. Gas per hr. We design, manufacture and erect Gas Producer Plant to individual requirements.

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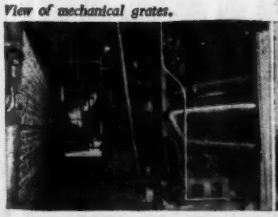
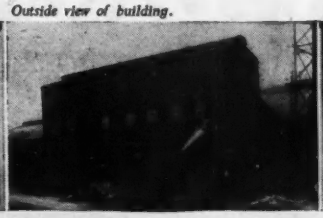
View of mechanical grates.

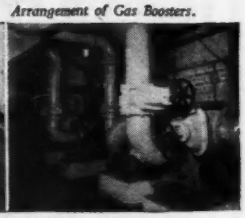


Outside view of building.



Fuel Handling Plant.

Arrangement of Gas Boosters.



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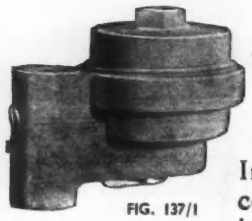

FIG. 137/1

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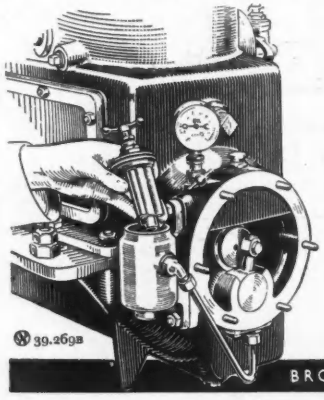

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